The

British Medical Journal

The Journal of the British Medical Association.

INCLUDING AN EPITOME OF CURRENT MEDICAL LITERATURE.

WITH SUPPLEMENT.

No. 2878. SATURDAY, FEBRUARY 26, 1916. Price 6d.

PERIODICAL ROOM RECEIVED MAR 18 1916 UNIV. OF MICH. LIBRARY

CONTENTS Page 1. INDEX TO ADVERTISEMENTS Page 2

By C. MANSELL MOULLIN,
M.D. Oxon., F.R.C.S., Consulting Surgeon to the London Hospital.
Fourth Edition. Price 6s.
ENLARGEMENT OF THE PROSTATE.
London: H. K. LEWIS & Co. Ltd., 136, Gower Street.
WHEN TO OPERATE IN INFLAMMATION OF THE APPENDIX.
Third Edition now ready. Price 2s. 6d.
London: J. BALE, SONS & DANIELSSON, LTD.

Pp. viii. + 350, with 102 Illustrations. Price 7s. 6d. net.
DISEASES OF THE RECTUM AND ANUS.
By P. LOCKHART MUMMERY, F.R.C.S.
BAILLIÈRE, TINDALL & COX,
8, Henrietta Street, Covent Garden.

NOW READY. Price 1s. 6d. net; post-free, 1s. 8d.
HÆMATURIA, A SYMPTOM.
ITS CAUSES AND DIAGNOSIS.
By DAVID NEWMAN, M.D., &c.,
Cons. Surgeon to the Royal Infirmary, Glasgow.
Glasgow: ALEX. STENHOUSE, 40 & 42, University Av.
London: HENRY KIMPTON, 263, High Holborn, W.C.

JUST PUBLISHED. Fifth Edition. Reviewed and Enlarged with new Illustrations. Crown 8vo. Cloth, pp. 576. 8s. net; postage 5d.
WHEELER'S HANDBOOK of MEDICINE
By W. R. JACK, B.Sc., M.D., F.R.F.P.S.G.,
Physician to the Glasgow Royal Infirmary, Lecturer in Clinical Medicine in the University, Glasgow.
E. & S. LIVINGSTONE, Medical Publishers and Booksellers, 15, Teviot Place, Edinburgh.

JUST PUBLISHED. Crown 8vo. Cloth, pp. 182. 14 Illustrations. Price 2s. 6d. net; postage 4d.
BACK INJURIES
And their Significance, under the Workmen's Compensation and other Acts.
By ARCHIBALD McKENDRICK, F.R.C.S.E., etc.,
Surgeon in charge of Surgical X-Ray Dept., Royal Infirmary, Edinburgh.
E. & S. LIVINGSTONE, Medical Publishers and Booksellers, 15, Teviot Place, Edinburgh.

MORE SECRET REMEDIES
(SECOND SERIES)
What they cost and what they contain.
SECRET REMEDIES
(FIRST SERIES)
Price 1s. 4d. each volume, post free.
BRITISH MEDICAL ASSOCIATION, 429, Strand, W.C.

By
W. SOLTAU FENWICK, M.D.
DYSPEPSIA:
ITS VARIETIES AND TREATMENT.
Octavo, 485 pp. Illustrated. Cloth, 13s. net.
W. B. SAUNDERS COMPANY,
9, Henrietta Street, Strand, London.

FAITH, MEDICINE AND THE MIND.
A Manual of Hypnotism and Suggestion.
By CHARLES REINHARDT-RUTLAND, M.D.
Third Edition, with an Introduction by Sir OLIVER LODGE, F.R.S.
Price 2s.
THE LONDON PUBLICITY CO., LTD.,
83A, Chester Square, London, S.W.

Now Ready. Pp. xi + 256. With 5 Charts. 5s. net.
ON ALCOHOLISM:
Its Clinical Aspects and Treatment.
By FRANCIS HARE, M.D.,
Medical Superintendent of the
NORWOOD SANATORIUM,
Beckenham.
"Marked by candour, common sense, and moderation . . . likely to become the standard text-book."—*British Medical Journal.*
London: J. & A. CHURCHILL,
7, Great Marlborough Street.

By C. HAMILTON WHITEFORD,
M.R.C.S., L.R.C.P.
AN OPERATING THEATRE IN PRIVATE PRACTICE.
With Illustrated Supplement.
PRICE 3s 6d. NET.
London: HARRISON & SONS, 45, Pall Mall, S.W.

Now Ready. viii. + 280 pp. Price 5s. net. With original Photographs and 143 Special Prescriptions.
TREATMENT OF
DISEASES OF THE SKIN.
By KNOWSLEY SIBLEY, M.D.Camb.
London: EDWARD ARNOLD, 41 & 43, Maddox St., W.

J. W. THOMSON WALKER,
M.B., C.M.Edin., F.R.C.S.Eng.
SURGICAL DISEASES AND INJURIES OF THE GENITO-URINARY ORGANS.
350 Figures, 8 Colour and 41 Black and White Plates, and 372 Illustrations in the Text. Price 30s. net.
"Will hold its place for many years as the best English text-book on the subject."
British Journal of Surgery.
CASSELL & Co., La Belle Sauvage, London, E.C.

BRONCHIAL ASTHMA: *Its Pathology and Treatment.*
By J. B. BERKART, M.D.,
Late Physician to the City of London Hospital.
3rd Edition, Revised. 8vo. 14s. net.
"The work is a splendid summary of the present day knowledge of the disease."—WEST LONDON MEDICAL JOURNAL.
By THE SAME AUTHOR.
NERVOUS ASTHMA: *Its Pathology and Treatment.*
8vo. 2s. 6d. net. Of all Booksellers.
London: HUMPHREY MILFORD,
Oxford University Press, Amen Corner, E.C.

Third Edition. Pp. viii. + 134.
With 23 Illustrations. Price 3s. 6d. net.
ANÆSTHETICS.
By J. BLUMFELD, M.D.
Senior Anæsthetist to St. George's Hospital.
"Dr. Blumfeld's handbook of Anæsthetics leaves little to be desired . . . . It is packed with useful information and practical hints."—*Brit. Med. Journ.*
"A truly excellent manual."—*Lancet.*
BAILLIÈRE, TINDALL & COX,
8, Henrietta Street, Covent Garden, London.

IN THE PRESS. With 130 Illustrations.
By CHARLES J. HEATH, F.R.C.S.Eng.
Late Surgeon to the Hospital for Diseases of the Throat, Golden Square, London.
AURAL SUPPURATION:
ITS ARREST WITH PRESERVATION OF THE HEARING.
The indications for performance of the Author's conservative mastoid operation.
London: BAILLIÈRE, TINDALL & COX, 8, Henrietta Street, Covent Garden.

REGISTERED AS A NEWSPAPER.] [COPYRIGHT.] [ISSUED WEEKLY.

COMBATS SERIES, 31—PERSIAN

'SOLOID' BRAND (Trade Mark) TOLAMINE

gr. 8·75 and gr. 87·5

TOLAMINE (para-toluene-sodium-sulphochloramide) is a new antiseptic for the treatment of infected wounds, etc.

The following are some of the advantages reported*

1. Molecule for molecule the germicidal activity of TOLAMINE is four times that of sodium hypochlorite.
2. TOLAMINE is non-corrosive, practically non-toxic, and, being much less irritating than sodium hypochlorite, may safely be used in stronger solutions (five to ten times the strength).
3. TOLAMINE does not precipitate or coagulate blood serum, an important consideration in the treatment of wounds.
4. TOLAMINE is readily soluble in water and perfectly stable as a solid or in solution.

* See report on Chloramine-T in the *B.M.J.*, Jan. 29, 1916, *p.* 160

TOLAMINE is British-made at the 'Wellcome' Chemical Works

Persian King of the Sassanian period, engaged in personal combat on horseback. The King's lance is seen piercing the neck of his enemy's steed, which is forced backwards on its haunches by the impact. The lance of his opponent is broken. Behind the King charges a second rider, carrying a standard. Date, circa A.D. 241-272.

'SOLOID' products present pure TOLAMINE in the most convenient condition available

One product of gr. 8·75 strength dissolved in 2 oz. of water, or one product of gr. 87·5 strength dissolved in 20 oz. of water makes a 1% solution.

'Soloid' Brand Tolamine, gr. 8·75 is issued in bottles of 100, and gr. 87·5 in tubes of 10

Obtainable through all Chemists

BURROUGHS WELLCOME & CO
LONDON

NEW YORK MONTREAL SYDNEY CAPE TOWN
MILAN SHANGHAI BUENOS AIRES BOMBAY

All communications intended for the Head Office should be addressed to
SNOW HILL BUILDINGS, LONDON E.C.

London Exhibition Room: 54, Wigmore Street, W.

COPYRIGHT

THE EPIDEMIC JAUNDICE OF CAMPAIGNS.

BY WILLIAM HENRY WILLCOX, M.D., F.R.C.P.LOND.,

LIEUTENANT-COLONEL, R.A.M.C.; CONSULTING PHYSICIAN TO THE MEDITERRANEAN EXPEDITIONARY FORCE; PHYSICIAN TO OUT-PATIENTS, ST. MARY'S HOSPITAL, LONDON.

THE following paper is based upon the study of a considerable number of cases of jaundice in the Mediterranean area during the past six months, and also on the study of a number of cases of jaundice from the Expeditionary Force in France during the earlier part of the war.

Jaundice is of common occurrence amongst troops on campaign. In the South African war a considerable number of cases were reported. In the present war jaundice has occurred amongst our troops in almost all parts of the sphere of operations.

The cases of jaundice of the epidemic type have fortunately been of a mild nature generally, and very few deaths have been reported. A considerable amount of incapacity for duty has, however, resulted, so that epidemic jaundice is a disease of importance from the military point of view.

The epidemic jaundice of campaigns is of great pathological interest, since it throws considerable light on the pathology of jaundice generally.

It will be convenient to consider, first, the symptoms of the common type of epidemic jaundice as seen in the Mediterranean area during the later half of the past year. Other varieties of jaundice which were also observed will then be considered, and the relation between them will be discussed.

SYMPTOMS OF EPIDEMIC JAUNDICE (THE COMMON TYPE).

The patient had usually some abdominal discomfort for a few days, associated with anorexia, nausea, and either diarrhoea or constipation.

Pyrexia, generally of a mild type, would then set in, and this was associated with some chilliness, and in some cases by an actual rigor. Vomiting occurred sometimes at this stage, and also headache. Sometimes there were "pains all over." Abdominal discomfort in the hepatic and epigastric regions usually occurred. The pyrexial period in some cases lasted only one or two days. Generally it was from two to four days, but cases have been observed in which it lasted as long as eight days.

Liver: Gall Bladder.

Jaundice now occurred, at first slight, but it gradually increased in intensity and became of the ordinary type of obstructive jaundice. The stools were pale and the urine bile-coloured when the jaundice became marked. With the onset of jaundice the temperature usually fell to normal and remained so.

At this stage definite enlargement of the liver could be made out. It was felt usually extending to one or two inches, or even more, below the subcostal border in the right nipple line.

The surface was smooth and the enlargement uniform. There was slight tenderness on palpation over the liver. It moved freely with respiration. In some cases there was definite enlargement over the gall bladder region, and on palpation the gall bladder could be felt. This enlargement of the gall bladder occurred in about 10 per cent. of the cases, and it no doubt indicated an obstruction due to the catarrhal inflammation of the duodenum, involving the common bile duct and its ampullary orifice into the duodenum.

The stools were pale when the jaundice was marked, and unless aperients were given they were constipated.

Spleen.

At this stage the spleen could usually be felt, extending for half an inch, or considerably more, below the left subcostal border on inspiration. In some cases there was definite tenderness on palpation over the spleen. Percussion over the splenic area showed an increase of dullness upwards. The tongue was often moist and clean, but in some cases it was moist and somewhat furred.

Circulation.

The pulse was quickened during the pyrexial period to, for example, 80 to 90 per minute, but with the onset of jaundice it became slow, in some cases being only about 50 per minute.

The heart condition was very interesting. A definite increase of the deep cardiac dullness occurred. This was most marked on the right side. On percussion in the fourth space to the right of the sternum the cardiac dullness extended often to two inches beyond the right sternal margin. The cardiac dullness showed only slight increase to the left, reaching to the left nipple line or half an inch or so beyond.

The dilatation of the right side of the heart in epidemic jaundice is very characteristic, and, apart from pulmonary conditions, the only other acute disease showing commonly a specific dilatation of the right side of the heart is acute rheumatism. Usually no cardiac murmurs were present on auscultation, though occasionally a systolic murmur would be heard with the first sound. The dilatation of the right side of the heart subsided with rest, but it usually persisted for several days.

Urine.

The urine showed the usual signs of a specimen from a case of obstructive jaundice. It was acid and contained bile pigments. Acetone and diacetic acid were not present in the cases examined. Albumin was absent, except in the exceptional severe cases. Casts were usually absent, except in very severe cases.

General Symptoms.

No anaemia was noticed in the cases observed, showing that this type of epidemic jaundice was not associated with haemolysis.

Pruritus was not a marked symptom in the cases of epidemic jaundice, though the jaundice was often quite deep for two or three weeks or more. Purpura occurred in a few of the cases. The cutaneous manifestations, such as lichen, urticaria, boils, xanthoma, telangiectasis, etc., which are common in cases of protracted obstructive jaundice due to other causes, were not observed here.

It is remarkable in cases of jaundice due to mechanical obstruction of the duct, without liver involvement, for what a long time the deep jaundice will persist without toxic symptoms due to bile absorption (cholaemia) developing.

In the cases of epidemic jaundice the toxic symptoms which occurred must be regarded as due either to the toxaemia of the infection, or to autointoxication from resulting degenerative changes in the liver, and *not* to the toxic effect *per se* of the bile in the blood.

Nervous System.

Asthenia was a marked symptom in all but the very mild cases of epidemic jaundice, and depression was a characteristic symptom in most of the cases while the jaundice persisted. It must be mentioned, however, that several officers remained on active duty throughout the whole period of their attack, and it was remarkable to see them doing responsible and important work while deeply jaundiced.

The reflexes (knee-jerks, plantar, and abdominal) showed usually no change, and signs of organic disease of the nervous system were usually absent.

In another paper I have called attention[1] to the frequency of the occurrence of epidemic jaundice amongst the few beri-beri cases occurring amongst the troops in the Dardanelles area. The beri-beri cases all showed marked signs of multiple neuritis, and it is possible that in some of the cases the toxaemia associated with a previous attack of jaundice may have been a factor in the development of beri beri.

Epidemic jaundice was, however, not the sole etiological factor in these cases; there was a more important dietetic factor, to which was added a toxic factor associated with jaundice.

The marked general weakness which usually occurred in the cases of epidemic jaundice rendered convalescence slow. This was especially evident in the cases showing cardiac dilatation and marked hepatic and splenic enlargement. In these cases weakness and dyspnoea on exertion

occurred for some weeks, and the diminution in the size of the liver and spleen was slow.

Usually in the moderately severe cases of epidemic jaundice two months, or even more, would elapse before the patient was fit to return to active duty. In the milder cases the period of inability for duty might be less, but it was usually about two months.

Secondary Pyrexia.

Some of the moderately severe cases of epidemic jaundice showed a second period of pyrexia occurring after the temperature had become normal. This was exceptional unless the patient had contracted some other infection—for example, paratyphoid fever—in addition to the epidemic jaundice.

Toxaemia.

In very rare instances cases of epidemic jaundice showed symptoms of marked toxaemia after the development of the jaundice. Stupor and a low delirium and vomiting, sometimes associated with hiccough, occurred. The pulse became feeble and usually quickened in rate. Some collapse occurred, the temperature being usually subnormal. Coma supervened and death occurred.

The above symptoms of the gravest cases were similar to those associated with acute yellow atrophy of the liver. They resulted, no doubt, from the degenerative changes in the liver cells, caused by the toxins of the infective agent, and the final symptoms were mainly due to an autointoxication from defective liver function. Fortunately only two out of a large number of cases examined were of this grave type, terminating fatally.

OTHER TYPES OF JAUNDICE.

Other types of jaundice commonly met with were:

1. *Catarrhal Jaundice.*

In this type of case the patient had for a few days symptoms of anorexia, nausea, sometimes vomiting, epigastric discomfort, and general malaise. Pyrexia was generally absent. Jaundice occurred of the obstructive type, associated with pale stools, and bile in the urine. The liver was slightly enlarged, but the spleen could not usually be felt.

In these cases the general symptoms were slight, except that depression and general weakness were marked, and it was usually several weeks before the patient was fit for duty.

2. *Jaundice associated with Specific Infections.*

Patients suffering from such diseases as typhoid fever, paratyphoid fever, relapsing fever, dysentery, malaria, etc., sometimes developed jaundice in the course of them.

With typhoid and paratyphoid fever the occurrence of jaundice of a catarrhal type was not uncommon. The jaundice generally occurred about the second or third week of the disease, and it was not a grave complication, unless associated with acute cholecystitis, when in a few cases operative treatment was necessitated.

Dysentery, both amoebic and bacillary, was sometimes associated with jaundice of a catarrhal type in the course of the attack. This was no doubt due to secondary infection of the bile duct and bile capillaries. The dysentery cases showed a great susceptibility to secondary infections of various kinds. Thus in amoebic dysentery secondary paratyphoid infections were not at all uncommon.

In *relapsing fever* jaundice was observed in a number of cases. The jaundice was not of the type of the epidemic jaundice described above, but was usually of a slight intensity, occurring after the second or third day of pyrexia, and it was of the haemolytic and not of the obstructive type. Pale stools did not occur, and bile in the urine was not constant. This jaundice rapidly cleared up when the fever subsided, and it was often so slight as to escape notice unless specially looked for.

In *malaria* slight jaundice of the haemolytic type and accompanied by definite anaemia was seen in chronic cases. Occasionally jaundice of the catarrhal type occurred in association with a malarial attack.

Mediterranean Yellow Fever.

Fortunately no cases of this type have occurred in the Mediterranean Expeditionary Forces, as far as I am aware.

Mediterranean yellow fever sometimes occurs in the Mediterranean area; it has been carefully studied by Dr. Ruffer, who has seen many cases and to whom I am indebted for a description of the disease.

It is a disease of high mortality. It begins with an acute onset, chilliness or rigor, headache, severe pains in the back and limbs, and high temperature being marked. Vomiting is common. The face is flushed and the eyelids are injected. Slight jaundice may occur during the first two or three days. Albuminuria is common and sometimes casts are present. In severe cases suppression of urine and fatal uraemia may supervene.

The temperature in a case of moderate severity will remain up for three or four days and then subside for a day or so, after which it rises again. In this secondary pyrexial period the jaundice becomes marked, haemorrhages such as haematemesis or melaena may occur, and frequently a profound toxaemia, like that of acute yellow atrophy, results, and death occurs. Mediterranean yellow fever resembles closely ordinary yellow fever, and it is probable that the infection is conveyed by the mosquito *Stegomyia fasciata.*

PATHOLOGY AND DIAGNOSIS.

Every case of jaundice seen on campaign should be examined with an open mind, and one should aim at making a true pathological diagnosis of the type of jaundice present. It is only by this means that prophylaxis and treatment can be carried out on correct lines.

It will be convenient briefly to review the causes of jaundice, and to consider the relationship of the "epidemic jaundice of campaigns" to other types of jaundice.

CLASSIFICATION OF JAUNDICE CASES.

These can be conveniently divided into two main groups:

1. *Obstructive jaundice*, where there is a *mechanical* obstruction in the common bile duct, preventing the flow of bile into the intestine. Types of this are:

1. Congenital absence of the bile duct.
2. Stricture of duct.
3. Obstruction in the duct itself:
   (*a*) From foreign bodies—for example, gall stones, bile sand, or parasites;
   (*b*) From growth in the wall of the duct;
   (*c*) From swelling of the mucous membrane of the duct or its ampullary opening—for example, catarrhal jaundice.
4. Pressure on the duct from without—for example, tumours of pancreas, liver, stomach, etc., enlarged glands in portal fissure, aneurysm, etc., or kinking of the duct from dragging on it, as may occur in movable kidney.

2. *Non-obstructive Jaundice.*—This type has been called haematogenous jaundice, owing to the idea that the symptoms were the result of excessive bile formation consequent on increased blood destruction.

Modern research has shown that the distinction between the two types of jaundice is to some extent an artificial one. In most cases of non-obstructive jaundice, although no gross obstruction exists in the common bile duct or main hepatic ducts, yet there is an obstruction in the smaller bile ducts due to catarrh (cholangitis). Also in these cases the bile is altered in character, and often the viscidity is much increased. In many varieties of this type of jaundice there is increased destruction of red blood corpuscles and increased bile formation.

Hepatogenous Jaundice.

The terms "hepatogenous," "haemohepatogenous," and "intrahepatic" have been suggested for this type of jaundice—that is, for the non-obstructive type.

The following are its chief varieties:

1. *Toxic*, caused by chemical poisons. These may act by causing a cholangitis, and degenerative changes in the liver cells—for example, tetrachlorethane, chloroform, etc.—or by causing in addition marked haemolysis—for example, phosphorus, arseniuretted hydrogen, toluylenediamine, snake venom, etc.

2. *Toxaemic*, caused by the toxins set free by specific pathogenic organisms—for example, typhoid fever, paratyphoid fever, malaria, yellow fever, relapsing fever, typhus fever, septicaemia, pyaemia, etc. In the first two of these diseases the jaundice is due to an infective cholangitis—

that is, it is hepatogenous in type, while in the remaining diseases there is in addition increased haemolysis, so that the term "haemohepatogenous" applies to the type of jaundice.

3. *The Epidemic or Infective Jaundice of Campaigns and Weil's Disease.*—Both of these diseases are types of toxaemic jaundice and should really be classed with the preceding group. Weil's disease is a special type of infectious jaundice, due to infection with the *Bacillus proteus*. Its symptoms are very similar to those of the epidemic jaundice of campaigns, but are of a more acute and severe type.

4. *Icterus Gravis, or Acute Yellow Atrophy of the Liver.*—This condition is really a "symptom complex," the result of cessation of liver function consequent on extreme degenerative changes in the liver cells. The symptoms of acute yellow atrophy of the liver are identical with those of the grave cases of either the toxic or toxaemic types of non-obstructive jaundice—for example, tetrachlorethane jaundice.

5. *Other Special Types of Jaundice:*

I. Hereditary icterus.
II. Icterus neonatorum due to:
(1) The physiological haemolysis occurring with the circulatory changes at birth;
(2) Congenital absence of the bile or hepatic ducts;
(3) Congenital syphilis;
(4) Septic pylephlebitis due to septic inflammation spreading from the umbilical cord.

PATHOLOGY OF "EPIDEMIC JAUNDICE OF CAMPAIGNS."

Post-mortem examinations were made on two fatal cases in this series of cases.

Post-mortem Appearances.

There was the usual bile staining of the skin and tissues associated with a case of deep jaundice.

Small Intestines.—The duodenum showed a marked red velvety appearance of the mucous membrane, which was swollen. There was congestion of the ileum in one case; this was most marked in the lower half. It was much less intense than that of the duodenum.

The common bile duct showed redness and swelling of the mucous membrane. This catarrhal condition had spread up the cystic duct and into the hepatic ducts.

The gall bladder was distended in one case with a thin semi-purulent greenish fluid, from which paratyphoid B organisms were obtained.

The liver showed a pale yellowish appearance and some bile staining. The fatty degeneration was more marked in patches.

The heart showed dilatation, which was especially marked in the right auricle and ventricle.

The heart muscle was somewhat pale and showed some degenerative changes. In one case an *ante-mortem* thrombus was present in the right auricle and ventricle. A portion of this had become dislodged and caused an infarct in the lower lobe of the right lung.

The kidneys showed some degenerative changes of the epithelium.

In neither of the above cases was there any complete mechanical obstruction of the larger bile ducts.

Duodenitis.

In the above cases a marked duodenitis had occurred. In one case this was primary, in the other it had probably spread from a paratyphoid infection of the lower intestine.

The common bile duct and larger bile ducts showed marked catarrh spreading along their course and causing a definite cholangitis.

There were fatty changes present in the liver, and also in the kidneys and heart muscle.

The duodenitis had given rise to a cholangitis, which caused obstruction not in the large bile ducts but in the smaller ducts in the liver itself.

As a consequence of the toxaemia associated with the disease, fatty degeneration had occurred in the liver cells, and to a less extent in the kidney, epithelium and heart muscle. These degenerative changes caused impairment of function of the liver, and autointoxication, so that the terminal symptoms of both the fatal cases of jaundice were those of a toxaemia such as is observed in acute yellow atrophy.

The pathological condition found in the two fatal cases of epidemic jaundice described, was almost identical with that observed in cases of tetrachlorethane poisoning which I have described elsewhere.[2] In each condition the jaundice is deep and due to a cholangitis, causing blocking of the finer bile ducts in the liver itself. In each duodenitis is marked.

In tetrachlorethane poisoning the poison is of a deadly nature, producing marked fatty degeneration of the liver cells, and so much consequent autointoxication that a fatal result is common, and the prognosis always grave when the jaundice is deep. The terminal symptoms are exactly similar to those of acute yellow atrophy.

In epidemic jaundice, fortunately, the toxin from the bacterial infection is less deadly in nature, so that fatty degeneration of the liver cells or those of the kidney or heart is very rare, consequently symptoms of autointoxication such as occur in the late stages of tetrachlorethane poisoning or in acute yellow atrophy are very rare.

THE BACTERIOLOGY OF EPIDEMIC JAUNDICE.

In a few of the cases examined a paratyphoid organism, usually of the "B" type, was found, but in the great majority of the cases of epidemic jaundice special tests for paratyphoid "A" and "B" were negative.

Captain Archibald, R.A.M.C., made blood cultures from several cases while in the pyrexial stage, before the development of jaundice, but the results were negative. Blood culture tests, after the development of jaundice, likewise proved negative.

The specific organism which is the cause of epidemic jaundice of campaigns has yet to be isolated.

It is interesting to note that in a small outbreak of infectious jaundice investigated at Bruyères, France, by Dr. Carnot and Dr. Weill-Halle,[3] an organism of the paratyphoid group was isolated from the stools. The organism did not correspond to either the "A" or "B" varieties of paratyphoid. The cases occurred in the civil population.

SUMMARY.

The epidemic jaundice of campaigns thus appears to start as a gastro-intestinal infection, the inflammatory catarrh being most marked in the duodenum.

At this stage pyrexia and a certain amount of toxaemia occurs, but there does not appear to be a general blood infection usually, since blood cultures have generally been negative. A catarrhal cholangitis follows from spread from the duodenum, and marked jaundice now sets in, due to obstruction in the finer bile ducts.

The jaundice is hepatogenous in type and does not appear to be associated with increased haemolysis of red blood corpuscles, anaemia being absent.

Fortunately, most cases do not progress beyond this stage, and the catarrhal condition subsides with clearing up of the jaundice. In very exceptional cases the infective condition may give rise to degenerative changes in the liver, and symptoms of icterus gravis will then supervene.

It is interesting to note that sometimes mild gastro-enteritis occurs in cases exposed to similar conditions, and that in many of them jaundice will develop, while in a few it will not. It has been thought that as regards the infection and toxaemia associated with it the two groups of cases were similar.

Catarrhal Jaundice of Campaigns.

This is very common, and it must be classed etiologically with epidemic jaundice. When on campaign numerous cases of epidemic jaundice of the type described above are occurring there will also occur with them many cases in which there is no pyrexia or splenic enlargement.

These cases are undoubtedly due to an infection of a mild type, similar to that of the epidemic cases, and the asthenia and nervous weakness of the two conditions are very similar.

The French school have long regarded catarrhal jaundice as a benign form of infective jaundice, and this view appears to be correct as regards the catarrhal jaundice of campaigns.

Toxaemic Jaundice.

In cases of jaundice symptoms of any specific infection which may be the primary cause of the jaundice should always be looked for.

The clinical symptoms will usually indicate this type of jaundice—for example, the prolonged pyrexia of typhoid and paratyphoid is unlike that of epidemic jaundice, the rigor and very high temperature of malaria; the early delirium and profound toxaemia of relapsing fever

are quite distinctive. In every case of jaundice any accompanying specific infection should be elucidated without delay by means of appropriate pathological investigations.

ETIOLOGY.

Since the causal agent of "epidemic jaundice of campaigns" is not known with certainty, the etiological factors cannot be stated with precision. It is certain that the insanitary conditions inevitably associated with military campaigns play a most important part.

Food.—The infection is almost certainly conveyed by the alimentary tract, and contamination of food with infected dust probably plays a most important part in the causation. Flies, also, as in paratyphoid and typhoid fever, may convey infection to food; but they are probably not the main cause of the spread of the disease, since, in the Dardanelles area epidemic, jaundice occurred after the flies had largely disappeared.

Water.—The infection may be conveyed by water, but cases occurred where this channel of infection could be excluded.

Carriers of the disease very probably, as in paratyphoid and typhoid fevers, are responsible for the spread of infection.

Air.—In civil practice outbreaks of epidemic jaundice have been described[4] in which the evidence pointed to the disease being air-borne and conveyed by the respiratory tract. Thus infection was spread in day schools amongst children sitting at the same desk.

Probably in the "epidemic jaundice of campaigns" the infection is almost entirely gastro-intestinal in its mode of spread, since air-borne infection was not observed—for example, epidemic jaundice was not observed to be conveyed in hospitals from one patient to another, when isolation of the jaundice cases was not carried out.

PROPHYLAXIS.

As regards prophylaxis, careful attention to latrines, to prevent spread of infection by dust and flies, is most important. Fly and dust proof latrines are very valuable as regards prevention. Refuse destruction by means of incinerators is most important.

The greatest care possible should be paid to prevent contamination of food and water.

Patients suffering from epidemic jaundice should receive hospital treatment in order that spread of infection may be guarded against.

Notification of jaundice cases is a most important prophylactic measure in order that immediate preventive measures may be instituted.

TREATMENT.

Rest in bed in the early part of the disease should be insisted upon. Careful dieting, which will be mainly liquid, is important.

It must be remembered that on campaign the milk will, owing to its sterilization, be devoid of anti-scorbutic and anti-beri-beri vitamines, so that some articles of diet should be given to counteract that deficiency. Thus fresh lemon juice in lemon drink is important. Porridge, pea-flour in soups, mashed potato, yeast in some form—for example, dried yeast added to hot milk, or yeast cakes made into a paste with milk—are important additions to the dietary. Soups to which fresh vegetables are added are valuable.

Owing to the anorexia present, the diet must necessarily be quite light. Excess of protein should be avoided, and meat is best not given until the jaundice is clearing up.

As regards medicines the following mixture may be given with advantage:

Sod. bicarb.	gr. xx
Potass. citrate	gr. xxx
Sod. sulph.	gr. xxx
Syrup. aurantii	ʒj
Aqua	ad ʒj

t.d.s.

Urotropin gr. x t.d.s. in water, as a gastro-intestinal antiseptic seemed to do good in many cases. Calomel should not be given in repeated doses, since it appeared that patients suffering from epidemic jaundice were very susceptible to the effect of calomel thus given. In some cases mercurial stomatitis occurred. There is, however, no objection to giving a single dose of calomel in the early stages.

The cases almost without exception progressed favourably under treatment, though, as described above, convalescence was often somewhat slow.

For valuable help in the above work my thanks are due to Captain Archibald, R.A.M.C., for placing his bacteriological results at my disposal; also to Lieutenant-Colonel Crawford and Lieutenant Collins, R.A.M.C., of No. 18 Stationary Hospital; to Major MacMunn, R.A.M.C., of No. 15 Stationary Hospital; to Major Lewis, R.A.M.C., and to Lieutenant Corbett, R.A.M.C., of No. 16 Stationary Hospital, for valuable help and co-operation.

REFERENCES.

[1] Beri-beri, *Lancet*. [2] An Outbreak of Toxic Jaundice of a New Type amongst Aeroplane Workers, *Lancet*, March 13th, 1915. [3] *Lancet*, July 24th, 1915. [4] Dr. Cockayne, *Lancet*, July 22nd, 1914.

THE TREATMENT OF TOXIC JAUNDICE DUE TO TETRACHLORETHANE POISONING.

BY

WILLIAM HENRY WILLCOX, M.D., F.R.C.P.LOND.,

LIEUTENANT-COLONEL R.A.M.C.,

PHYSICIAN TO OUT-PATIENTS, ST. MARY'S HOSPITAL, LONDON, W.

THE subject of toxic jaundice from tetrachlorethane poisoning was fully dealt with in a paper read before the Medical Society of London, March 1st, 1915.[1]

It was pointed out that this type of toxic jaundice was of frequent occurrence amongst the workers in aeroplane factories, who were exposed to the vapour of the "dope" or cellulose varnish used for the wings of aeroplanes. One of the constituents of the dope or cellulose solution is tetrachlorethane. It was shown that the vapour of the tetrachlorethane in the dope, if inhaled for long periods, as occurred in the case of aeroplane workers, was likely to give rise to malaise and jaundice, and that this jaundice was of a serious type, and in severe cases often terminated fatally. The pathology of the condition showed that the jaundice was due to a cholangitis set up in the smaller bile ducts, causing an obstruction to the flow of bile from the liver, and also there was present marked fatty degeneration of the liver cells.

In severe cases this fatty degeneration was followed by necrosis of the liver cells and symptoms of autointoxication identical with those of acute yellow atrophy of the liver.

Did the patient survive the effect of necrosis of some portion of the liver, then the affected area became replaced by fibrous tissue; that is, a replacement fibrosis occurred and symptoms of portal obstruction—for example, ascites, etc.—resulted.

The jaundice of tetrachlorethane poisoning was found to be "hepatogenous" in type. It was not associated with haemolysis or anaemia, and no changes in the red blood corpuscles were observed.

The kidneys in severe cases showed degenerative changes—for example, fatty degeneration.

Pathology.

It is important that the pathology of this type of jaundice be thoroughly understood in order that the treatment of cases can be carried out on right lines.

Early Symptoms.

Obviously the first indication of the treatment of an early case is the removal of the patient from all influence of the poison. The presence of anorexia, drowsiness, general malaise, constipation, headache, and occasional vomiting, are quite sufficient indications for this step to be at once taken in the case of aeroplane workers.

The above early symptoms are the first indications of the poisoning, and treatment should be at once commenced. Unless at this stage the patient is removed entirely from the toxic action of tetrachlorethane, jaundice is almost certain to supervene and render the prognosis much more serious.

It is thus seen how important is the periodical medical inspection of factories where tetrachlorethane is used.

Classification of Cases.

From the point of view of treatment cases may be divided up into—

I. Early cases with little or no jaundice (pre-jaundice stage).
II. Cases with jaundice but not marked toxaemia.
III. Cases with jaundice and marked toxaemia (acute yellow atrophy or icterus gravis type).
IV. Cases with signs of hepatic fibrosis (replacement fibrosis) and portal obstruction.

In all cases of toxic jaundice of the type described, since the liver is profoundly affected and as the kidney may likewise be affected, it is important to relieve these organs as much as possible by giving a diet which is easily digestible and in which the protein and extractives are reduced as much as possible. Also all toxic drugs should be avoided.

I. *Early (Pre-jaundice) Cases.*

These patients should have light diet—for example, milk, fruit, vegetables, milk puddings, toast or bread. Meat, meat extracts, soups, and alcohol should be avoided. Tea or coffee may be given owing to their diuretic action, and the effect of the theine or caffeine present is to relieve the headache.

The bowels should be kept open by an initial suitable aperient—for example, aloes and cascara, to which podophyllin or colocynth may be added. A single dose of calomel, say 2 or 3 grains, may be given, but it must be remembered that in toxic jaundice cases of all kinds *repeated small doses of calomel are to be avoided.* These patients are very susceptible to their influence, and there is serious risk of mercurial stomatitis resulting.

Lemon drink, or the imperial drink used in hospitals, may be freely taken:

Potassii tartratis acidi	ʒj
Syrup. limonis	ʒjss
Aquam ... ... ad	Oj

For medicine—

Sod. sulphate	ʒss to ʒj
Potass. citrate	gr. xl
Sod. bicarb.	gr. xx
Syrup. aurantii	ʒj
Aq. ... ... ad	ʒj

t.d.s.

should be given so that the bowels may be kept open. Rest and fresh air are advisable, and the patient should be kept free from toxic influences of all kinds. Rest in bed is not essential. The room occupied by the patient should be well ventilated and the air kept fresh and pure.

II. *Cases with Jaundice but not Marked Toxaemia.*

The treatment should be on the general lines, as described under I. Rest in bed is essential.

Diet should be liquid if there is any tendency to vomiting—for example, whey, citrated milk (2 grains of sodium citrate to the ounce), raisin tea (made by boiling up ½ lb. of broken raisins with 1 pint of water and straining), Benger's food; tea and coffee may be taken. The bowels should be kept loose by means of aperients and the sodium sulphate mixture given above. All toxic drugs should be avoided—for example, all forms of opium or its preparations and alkaloids are particularly harmful, since these patients are extremely susceptible to their influence. Chloroform—for example, chloroform water or spirits of chloroform—should not be given.

As a rule these cases improve and the jaundice gradually clears up. It is remarkable how long in even mild cases the jaundice persists. The cases do well unless toxic symptoms develop, and then further special treatment is necessary.

Cases of this type should not be allowed to return to work until at least a month has elapsed after the complete clearing up of the jaundice, and the work should not necessitate any further exposure whatever to the vapour of tetrachlorethane.

III. *Jaundice with Marked Toxic Symptoms.*

The symptoms which indicate toxaemia are vomiting, wandering or delirium, stupor, drowsiness, twitchings, or coma. The urine may become diminished in quantity, and the presence of albumin or casts are grave signs. Leucin or tyrosin in severe cases may be found in the deposit, and there may be aceton uria.

In cases of jaundice with toxic symptoms of any kind the bowels should be kept well open. The following mixture should be given every three hours:

S d. citrate	ʒj
Sod. bicarb.	gr. xxx
Potass. citrate	ʒss
Caffeine citrate	gr. iij
Syr. aurant.	ʒj
Aq. ... ... ad	ʒj

Infusion of normal saline Oij into a vein should be given once or twice a day until the toxic symptoms improve.

Subcutaneous injections of normal saline Oj to Oij may be given instead of the intravenous injections.

Rectal injection of sodium bicarbonate ʒiij, normal saline Oj, should be given every eight hours.

The diet should be on the lines of that for cases Type II.

In cases in which there is suppression of urine, cupping over the lumbar region and electric light baths given in bed, or hot-air baths, may be employed with advantage.

The prognosis in cases of this type is always grave. The elimination of toxins should be aimed at as far as possible, and saline infusion into a vein subcutaneously and rectal salines should be given early with this object.

Alkali producing drugs such as citrates and bicarbonates are given to counteract the tendency to acid intoxication.

In cases of toxic jaundice I, II, or III the symptoms due to the jaundice *per se*—that is, pruritus, skin symptoms, etc.—are not sufficiently marked to call for any special treatment.

IV. *Cases showing Signs of Portal Obstruction.*

These cases are rare. Rest in bed and light diet, as indicated under Type II, are important. Aperients should be given and the sodium sulphate mixture given above should be taken. Potassium iodide gr. x may be added with advantage to the mixture.

Where ascites is marked and is causing dyspnoea or distress paracentesis should be performed. A convenient indication for resort to this measure is afforded by observing the level of the ascitic fluid with the patient propped up in bed. If the dullness due to the fluid reaches above the umbilical level then artificial removal of the ascitic fluid should be carried out.

One case of this type after paracentesis had been performed twice, over 20 pints being removed on each occasion, made a complete recovery.

REFERENCE.

[1] An Outbreak of Toxic Jaundice due to Tetrachlorethane Poisoning: a New Type amongst Aeroplane Workers. *Transactions* of the Medical Society of London, vol. xxxviii, 1915; *Lancet*, March 13th, 1915.

THE TREATMENT OF KALA-AZAR (INDIAN FORM) BY TARTAR EMETIC INTRAVENOUSLY AND BY INUNCTIONS OF METALLIC ANTIMONY.

BY

SIR LEONARD ROGERS, M.D., F.R.C.P., I.M.S.,

PROFESSOR OF PATHOLOGY,

AND

CAPTAIN N. H. HUME, M.B., I.M.S.,

FIRST RESIDENT SURGEON, PRESIDENCY GENERAL HOSPITAL, CALCUTTA.

ONE of us (L. R.) early in 1915[1] commenced the use of tartar emetic intravenously in the treatment of kala-azar on the strength of its previous use in sleeping sickness, and independently of any other worker, although, as he subsequently learnt, Drs. Cristana and Caronia had previously given it successfully in the African form of kala-azar in Sicily, and he has already reported favourable results from its use in the Medical College Hospital.[2] Owing to difficulties in following up Indian patients, the European General Hospital presents better opportunities for determining the ultimate results of the new treatment, so during the last seven months we have been treating a consecutive series of cases of kala-azar among Europeans with tartar emetic, and are now able to form definite ideas of its value. All the intravenous injections have been given by one of us (N. H. H.), while the microscopical examinations of the specimens obtained by spleen puncture and the blood counts have been made by the other. The following

brief accounts of the cases will suffice to allow the results to be judged.

Case I.

A European male, aged 18, admitted February 23rd, 1915, for fever of six weeks' duration, with his spleen down to the navel. Red corpuscles 3,660,000, white 2,000, ratio of white to red 1 to 1,830, as in kala-azar. He was treated with alkalis internally, and later was given a subcutaneous injection of oil of turpentine, but the fever, of an intermittent and low remittent type, continued, and by the beginning of July he had lost 5 lb. in weight, being now only 89 lb. 10 oz.

Spleen puncture was now performed, and numerous Leishman-Donovan bodies were found. Intravenous injections of a 2 per cent. solution of tartar emetic were therefore commenced, beginning with ½ to 1 c.cm., soon raised to 3 c.cm., and gradually increased up to 9 c.cm., containing 18 cg. of tartar emetic. He very soon began to gain weight steadily, while the temperature declined to a slight intermittent rise to between 99° and 100° F. Two months after the commencement of the injections, when he had received a total of 140 cg. of tartar emetic, the fever finally ceased. Spleen puncture was again performed three weeks after the temperature had been quite normal, and no parasites could be found. By five weeks after the cessation of the fever he had gained 16 lb. 4 oz. since the commencement of the treatment, and was discharged "cured." He has been seen again recently, three months after leaving hospital, during which he has been at work. The spleen can no longer be felt, while the blood shows 5,750,000 red and 8,500 white corpuscles, so he may be considered to be completely cured.

Case II.

A European male, aged 28, who had been in hospital during June, was readmitted on August 2nd, 1915, for fever of seven months' duration with enlargement of the spleen to 1 in. below the navel, and of the liver 1 in. below the costal margin. Red corpuscles 2,990,000, leucocytes 1,375, ratio of white to red 1 to 2,174, being thus characteristic of kala-azar. Spleen puncture was performed, and Leishman-Donovan parasites found; intravenous injections of tartar emetic were commenced, and the doses increased up to 8 c.cm. of the 2 per cent. solution. After a total of 96 cg. had been given in the course of six weeks, the temperature became normal. When he left hospital at his own request on October 4th, 1915, he had gained 8 lb. in weight, while his spleen only extended 2 in. below the costal margin. As he left Bengal we have not been able to obtain his further history, but, judging from the other cases, there is good hope of his having completely recovered.

Case III.

A European male, aged 23, was admitted on December 21st, 1914, for fever of six months' duration; the spleen was enlarged to 3½ in. below the ribs, and he had cough with râles in the lungs, and diarrhoea. He was greatly emaciated, weighing only 6 st. The fever continued during the next six months, and no appreciable improvement occurred.

Spleen puncture was performed on June 28th, 1915, and numerous Leishman-Donovan parasites found. The blood now showed red corpuscles 2,960,000, leucocytes 1,125; ratio of white to red 1 to 2,631. Although it was recognized that the kala-azar infection was complicated by tuberculous disease of the lungs and bowels, and his case was a most unfavourable one, intravenous injections of tartar emetic were commenced on July 27th, but had to be omitted during September on account of the diarrhoea being worse; only a few doses up to a maximum of 6 c.cm. of the 2 per cent. solution could be given during the following two months, when the treatment was discontinued, after a total of 56 cg. of tartar emetic had been given, owing to the pulmonary phthisis having progressed to a serious degree. On December 10th, 1915, a second spleen puncture was performed, and no parasites could now be found, but as the specimen showed but little spleen pulp this negative result is open to possible doubt. The patient succumbed to tuberculous disease on December 27th, 1915, and no autopsy could be obtained. The spleen had become greatly reduced before his death. In this case the tartar emetic injections appear to have been successful in dealing with the kala-azar infection, but were powerless against the pulmonary tuberculosis.

Case IV.

A European male, aged 36, was admitted on May 13th, 1915, for fever of a year's duration, contracted in Assam, with a double rise of temperature at times. The spleen was enlarged to a little below the navel and hard. The liver was not felt. Red corpuscles 3,850,000, white 1,125; ratio of white to red 1 to 3,422. Weight 99 lb. 4 oz. The temperature was of a low remittent type, from 99° to 101° F. There was no material change during the first two and a half months in hospital.

Spleen puncture was performed on June 26th, but only blood with no spleen pulp was obtained, and parasites were not found. On repeating the puncture on August 5th Leishman-Donovan parasites were found and injections of tartar emetic were commenced. After five weeks' treatment, during which 78 cg. of the drug had been given, the temperature became normal, but the injections were continued for eleven weeks more and pushed up to 10 c.cm., or 20 cg. at a time, a grand total of 326 cg. in all having been given. On December 7th spleen puncture was again performed, with a negative result as regards parasites. On December 12th the blood showed red corpuscles 5,160,000, white 10,250; ratio of white to red 1 to 503—a most remarkable improvement up to fully the normal point. He had gained 20 lb. in weight, while the spleen only extended one inch below the ribs, and when he left hospital he was well on the road to complete recovery. He has been seen since, and remains in good health.

Case V.

A European male, aged 36, who had been in hospital during the previous year for kala-azar, and improved greatly on the alkaline treatment described by one of us (L. R.) in a previous paper.[3] He was readmitted in an emaciated and anaemic condition, and stated that he had suffered from fever for the past two months, with a double rise of temperature on some days. The spleen was greatly enlarged, extending some 2 in. below the navel, and fever of an intermittent and low remittent type was present.

On July 17th spleen puncture was performed and Leishman-Donovan parasites found in small numbers, so tartar emetic injections were commenced. He soon began to gain in weight, and his temperature fell to normal, but after three weeks he developed bronchitis, and for twenty days was in a most critical condition, during which the injections were suspended. On improvement in his general condition taking place the tartar emetic injections were resumed and the dose gradually pushed up to 10 c.cm. of the 2 per cent. solution, and by late in December 307 cg. had been given. The temperature had now been normal for over two months, during which he had increased 14 lb. in weight and was gaining daily in strength. Spleen puncture was now repeated, with a negative result, while his blood showed 5,120,000 red corpuscles and 6,750 white, the ratio of white to red being 1 to 578, and he has recently been discharged as "cured."

The improvement in this patient has been most remarkable, and we have every reason to expect a complete recovery from a very advanced stage of kala-azar.

Case VI.

A European male, aged 28, was admitted on October 4th, 1915, for fever of four months' duration and enlargement of the spleen to 8 in. below the costal margin and 1½ in. to the right of the navel. The blood showed 4,250,000 red corpuscles and 2,375 white, the ratio of white to red being 1 to 1,970.

Spleen puncture showed numerous kala-azar parasites. Intravenous injections of tartar emetic were at once commenced and 124 cg. had been given by the end of six weeks, when the treatment had to be suspended for three weeks owing to the inflamed state of the elbows due to the escape of a little of the highly irritating solution around the veins. Spleen puncture now revealed two degenerate-looking, badly-staining parasites only after a long search, and on January 7th, 1916, a further spleen puncture showed no parasites. The blood now showed 3,750,000 red and 3,250 white corpuscles, being 1 white to 1,098 red. He had now been free from fever for two weeks and had gained 16 lb. in weight.

This patient has only been long enough under treatment to show very marked improvement, but, judging from the other cases recorded above, we have very good hope of his eventual recovery. His case is included to complete the series we have so far treated with tartar emetic intravenously.

Inunctions of Finely Divided Metallic Antimony in Kala-azar.

One of us (L. R.) has already suggested and reported promising results from the inunction of finely divided metallic antimony in lanoline.[2] This simple method has great advantages in the case of children with small veins, who are also liable to be much frightened by such a procedure as spleen puncture. In the following case it appears to have been successful.

Case VII.

A European girl, aged 15, was admitted for kala-azar of a year's duration, with intermittent fever and enlargement of the spleen to 6 in. below the ribs. She was fairly well nourished, and was a comparatively favourable case for treatment.

Spleen puncture showed Leishman-Donovan parasites. One drachm of a 5 per cent. antimony ointment was rubbed in over the abdominal wall every third day. Her weight at the commencement of the treatment was 5 st. 8 oz. At the end of five weeks the temperature remained normal, and on her discharge from hospital she had gained 12 lb. and greatly improved in her general condition, while the spleen had also decreased considerably. She has continued the treatment since she left hospital, and was heard from recently, when she was keeping free from fever and continued to improve in health, so there is good promise of her complete recovery.

Case VIII.

Another European male child, aged 5, was admitted more recently with a history of fever for six months; there was marked emaciation, and the spleen extended 4½ in. below the ribs. He has now been treated for seven weeks with antimony inunctions. His temperature has fallen to normal, he is gaining weight and walking about, and appears to be much better. It is, however, far too early to say what will be the ultimate result, his case being included to complete the series which have been treated up to the time of writing this paper.

TECHNIQUE OF THE INJECTIONS AND DOSAGE.

The technique of the injections is very simple. A 10 c.cm. serum syringe is used, and the vein selected—usually either the median basilic or cephalic, or a prominent vein in the forearm—is made to stand out by tying a bandage round the upper arm, and by the patient clenching his fist. Tr. iodine is used to sterilize the skin. As soon as it is thought that the needle is in the vein the piston is withdrawn slightly, and a little blood is drawn up into a syringe; or, if a syringeful of the solution is to be given, the barrel is removed from the needle and a few drops of blood are allowed to flow before the solution is injected. Great care should be taken that the injection is made into the vein, and not into the tissues around the vein. The tartar emetic solution is very irritating, and a few minims injected under the skin cause great pain at the time of the injection, and later on a hard, tender, brawny swelling, or even sloughing of the tissues.

The symptoms which follow the injections have varied in different cases. Three patients had no untoward symptoms—one experienced a metallic taste in his mouth for several hours, a disinclination for food and vague abdominal discomfort. Another had a severe paroxysm of coughing and vomiting, which came on immediately after the injection, and lasted about ten minutes.

DOSAGE.

We began with only half to 1 c.cm. of the 2 per cent. solution, but rapidly increased it to 3 or 4 c.cm., and repeated the injection every two or three days, adding 1 c.cm. at each injection up to a maximum of 10 c.cm. if the patient had no marked gastric disturbance, in which case the dose may be reduced slightly for a time. In no case have any serious symptoms developed, although we have repeatedly given the large dose of 20 cg.

CONCLUSIONS.

The cases we have briefly recorded are a consecutive series and so are quite unselected. The uniform and rapid improvement in all except the unfortunate patient with tuberculous affection of the lung and bowels—who, indeed, also appears to have been much benefited as regards his infection with kala-azar—is quite unique in our experience of the disease, which, in the case of one of us, extends over almost twenty years, and includes a knowledge of nearly every case treated in the Calcutta European Hospital for the last fifteen years. Numerous recoveries of patients with kala-azar under other lines of treatment have been recorded by one of us,[3] but only in occasional cases, while in the majority of them most disheartening failures were met with. We now have no hesitation in advising the use of intravenous injections of tartar emetic as a routine method of treating kala-azar, beginning with 4 to 6 cg. on alternate days, and increasing by one or two centigrams every other day up to a maximum of 20 cg., if the patient will tolerate as much. The treatment should be continued until the temperature has remained normal for several weeks with steady gain in weight, and the parasites are found to have completely disappeared from the spleen, and the leucocytes have been raised to about the normal level. It is not necessary to continue until the spleen has been reduced to its normal size, as it will continue to shrink after the injections are omitted.

In children and nervous female patients inunctions of antimony ointment, preferably in a strength of 10 per cent., is worthy of trial, although there is not yet sufficient evidence to decide how far this much simpler measure can be relied on. If further experience shows it to be able to cure the disease it will present manifest advantages, especially in out-patient and village practice.

We believe that in tartar emetic, and probably in other preparations of antimony, a specific treatment for the terrible lingering and very fatal kala-azar has at length been found, and yet another serious tropical disease been brought within the pale of curable affections.

REFERENCES.

[1] BRITISH MEDICAL JOURNAL, July 31st, 1915, p. 197, and *Indian Medical Gazette*, July, 1915, p. 273. [2] *Indian Medical Gazette*, October, 1915, p. 364. [3] Ibid., May, 1915.

THE Police Commissioner of New York has established a psychopathic laboratory, under the direction of Dr. Louis Bisch of New York, for the examination of prisoners in respect of mental deficiency.

ATTEMPTS TO PRODUCE A SAFE AND EFFECTIVE BACILLUS DYSENTERIAE (SHIGA) VACCINE FOR PROPHYLACTIC PURPOSES.

BY J. D. THOMSON, A.M., M.B., C.M.
(From the Lister Institute.)

THE question of the prophylactic treatment of dysentery is of considerable importance, and the desirability of placing the subject on a satisfactory experimental basis is self-evident. As a preliminary contribution to this aspect of the question as it relates to the bacillary type of dysentery I venture to give the following general account of some experiments * carried out with *B. dysenteriae* (Shiga) at the Lister Institute of Preventive Medicine during the past year, and a summary of results so far obtained, with the conclusions drawn therefrom.

The vaccines that have been experimented with up to the present are:

I. *Heated Vaccines* (at 56° C. for one hour).
- A. Ordinary vaccines (non-sensitized).
- B. Vaccines treated with normal horse serum according to the method described and advocated by Broughton-Alcock in the BRITISH MEDICAL JOURNAL, August 18th, 1914.
- C. Vaccines treated with diluted specific Shiga-agglutinating serum.

II. *Unheated Carbolized Vaccines.*
- A. Ordinary carbolized vaccines ("non-sensitized").
- C. Carbolized vaccines treated with diluted † serum, obtained from known immune rabbits.

Experimental Animal.

The rabbit was chosen as the experimental animal because of its susceptibility to the Shiga bacillus and because it reacts in a characteristic manner both to the bacillus and to its toxin.

Test for Immunity.

For this I relied on the intravenous injection of living bacilli. The intravenous injection of 200 million of living bacilli (twenty-four hours culture) in 1 c.cm. of normal saline, of the strain of Shiga which was used, was known to be almost invariably fatal to the normal healthy full-grown rabbit. Of ten strong healthy control rabbits that got 250 million intravenously, only one survived. To test if the vaccinated rabbits had acquired a reasonable degree of immunity, the dose usually given was 1,000 million of living bacilli (twenty-four hours culture) in 1 c.cm. of normal saline, given intravenously.

Summary of Animal Experiments.

Four series of experiments were carried out. All vaccines were given subcutaneously. Heated vaccines were used in the first three series. These series differed from each other simply in respect of dose. Each series is further divided into three groups. In the "A" groups, ordinary (non-sensitized) vaccines were used; in the "B" groups, vaccines treated with normal horse serum; in the "C" groups, vaccines treated with diluted specific Shiga-agglutinating serum. In each case the serum was thoroughly removed by centrifugalizing and by washing. The deposit of "sensitized" bacilli was finally made into an emulsion of known strength in fresh normal saline. In Group C_1 the vaccine was sensitized and washed before it was heated, in Groups C_2 and C_3 the vaccines were first heated and then "sensitized."

SERIES I.

*Group A*1.—Vaccines used, ordinary (non-sensitized), heated at 56° C. for one hour.

Doses given: First, on January 14th, 200 million; second, on January 25th, 400 million; third, on February 4th, 800 million.

Of 20 rabbits that formed this group, 5 did not survive the first dose; 1 survived the first but not the second dose; 1 survived the first and second but not the third dose; 13 survived all three doses.

Each of the 13 that survived all three doses was given as a test dose 1,000 million of living bacilli (twenty-four hours Shiga culture) in

* Complete protocols of these experiments will appear, it is hoped, in a future number of the *Journal of the Royal Army Medical Corps.*

† Further experiments with unheated vaccines are now being carried out. These will include vaccines sensitized with undiluted specific Shiga serum from highly immune rabbits, prepared according to the method found successful in the case of vaccines used for therapeutic purposes by Gordon (*Proceedings of the Royal Society of Medicine*, Therapeutical and Pharmacological Section, 1913, vol. vi., pp. 153-176).

1 c.cm. of normal saline intravenously—6 on February 19th and 7 on February 23rd. Of these, 12 survived and 1 died about a month later, probably as a result of the test dose.

*Group B*1.—Vaccine used, "sensitized" with normal horse serum after it had been heated at 56° C. for one hour.

Doses given: First, on January 18th, 200 million; second, on January 29th, 400 million; third, on February 8th, 800 million.

Of 20 rabbits that formed this group, 12 did not survive the first dose. In 4 of these the fatal issue was complicated by pregnancy; 1 survived the first but not the second dose; 7 survived all three doses.

Each of the 7 that survived all three doses was given as a test dose 1,000 million of living bacilli (twenty-four hours Shiga culture) in 1 c.cm. of normal saline intravenously on February 23rd. Of these, 6 survived and 1 died as a result of the test dose.

*Group C*1.—Vaccine treated with dilute specific Shiga-agglutinating serum before it was heated.

Doses given: First, on January 26th, 200 million; second, on February 6th, 400 million; third, on February 16th, 800 million.

Of 20 rabbits that formed this group, 12 did not survive the first dose. In one pregnancy and in another pseudo-tuberculosis complicated the fatal issue; 8 survived all three doses.

Each of the 8 that survived all three doses was given, as a test dose, 1,000 million of living bacilli (twenty-four hours Shiga culture) in 1 c.cm. of normal saline intravenously on March 3rd. Of these, 7 survived, and 1 died of marasmus as a result of the dosage.

SERIES II.

In this series all the rabbits were inoculated on the same days, the doses being the same for each group—namely: First, on February 11th, 100 million; second, on February 22nd, 300 million; third, on March 4th, 900 million.

*Group A*2.—Vaccine used, ordinary (non-sensitized) heated at 56° C. for one hour.

Of 6 rabbits that formed this group, 2 did not survive the first dose. In 1 of these the fatal issue was complicated by the presence of pseudo-tuberculosis; 4 survived all three doses.

Each of the 4 that survived all three doses was given as a test dose 1,000 million of living bacilli (twenty-four hours Shiga culture) in 1 c.cm. of normal saline intravenously on March 20th. All 4 survived.

*Group B*2.—Vaccine heated at 56° C. for one hour, and afterwards sensitized with normal horse serum.

Of 6 rabbits that formed this group, 3 did not survive the first dose, 1 survived the first and second but not the third dose, 2 survived all three doses.

Each of the 2 rabbits that survived all three doses was given as a test dose 1,000 million of living bacilli (twenty-four hours Shiga culture) in 1 c.cm. of normal saline intravenously on March 20th. One died on the following day, and *post-mortem* examination revealed an advanced stage of pseudo-tuberculosis. The other survived.

*Group C*2.—Vaccine heated at 56° C. for one hour and afterwards treated with diluted Shiga-agglutinating serum.

Of 6 rabbits that formed this group, 2 did not survive the first dose (1 of these was pregnant); 1 survived the first and second but not the third dose; 3 survived all three doses.

Each of the 3 rabbits that survived all three doses was given as a test dose 1,000 million of living bacilli (twenty-four hours Shiga culture) in 1 c.cm. of normal saline intravenously on March 20th. One became completely paralysed in its hind quarters and died on the sixteenth day after receiving the test dose. The remaining 2 survived the test dose.

SERIES III.

In this series also all the rabbits of each group were inoculated on the same days, the doses being the same for each group—namely: First, on April 28th, 25 million; second, on May 8th, 100 million; third, on May 18th, 500 million.

*Group A*3.—Vaccine, ordinary (non-sensitized), heated at 56° C. for one hour.

Of 10 rabbits that formed this group, 1 did not survive the first dose. The *post-mortem* examination revealed old lesions in mesenteric glands and in liver; 1 survived the first but not the second dose—it had young after the second dose; *post-mortem* examination revealed old-standing disease of the lung; 8 survived all three doses.

Of the 8 that survived all three doses, 1 died before the test dose was due, and the cause of death in this case was complete prolapse of the womb during parturition.

Of the remaining 7, 2 got as a test dose 500 million of living bacilli in 1 c.cm. of normal saline intravenously on July 13th—1 survived and 1 died; 3 got as a test dose 1,000 million of living bacilli intravenously, 2 on June 4th, and 1 on July 13th—2 survived and 1 died as the result of this test dose; 2 got as a test dose 1,500 million of living bacilli in 1 c.cm. of normal saline intravenously—1 survived, and 1 died on the third day after this dose. The immediate cause of death was pneumonia.

*Group B*3.—Vaccine heated at 56° C. for one hour, and afterwards sensitized with normal horse serum.

Of 10 rabbits that formed this group, 2 did not survive the second dose, or surviving the ten days, were too ill to get a third dose. In both "abortion" occurred; 8 survived all three doses.

Of the 8 that survived all three doses, each of 2 got 500 million of living bacilli in 1 c.cm. of normal saline intravenously on July 13th; both survived this test dose. Each of 4 got 1,000 million of living bacilli in 1 c.cm. of normal saline intravenously as test dose, 2 on June 4th, and 2 on July 13th; all 4 survived. Each of 2 got 1,500 million of living bacilli in 1 c.cm. of normal saline intravenously on July 13th; 1 survived and 1 died as a result of this dose.

*Group C*3.—Vaccine heated at 56° C. for one hour, and afterwards treated with diluted Shiga-agglutinating serum.

Of 10 rabbits that formed this group, 1 did not survive the third dose; 9 survived all three doses.

Of the 9 that survived all three doses, each of 2 got 500 million of living bacilli in 1 c.cm. normal saline intravenously on July 13th—both survived this test dose; 1 got 750 million of living bacilli in 1 c.cm. normal saline intravenously on July 13th—survived. Each of 4 got 1,000 million of living bacilli in 1 c.cm normal saline intravenously, 2 on June 4th, 2 on July 13th; 3 survived, and 1 died as a result of this dose. Each of 2 got 1,500 million living bacilli in 1 c.cm. normal saline intravenously as a test dose on July 13th; both survived.

In all the above three series the vaccine used had been heated at 56° C. for one hour. During the course of some complement fixation experiments, undertaken with the idea of finding some guide to the dilutions of bacilli and of specific serum which, when mixed together, would give the optimum sensitization of the bacilli, it was found that very little fixation of complement took place in any dilution if the bacillary emulsion had been first heated to 56° C. for one hour, and that none at all took place if the bacillary emulsion had been heated to 62° C. for one hour or more. For a time it was supposed that this result was in some way connected with the death of the bacilli, and acting on this hypothesis the vaccine used for Group C_1 was prepared. Later on, other experiments showed that it is the heat that destroys the property of the emulsion to act as antigen, and that emulsions of Shiga made with freshly prepared carbolized saline (0.5 per cent. carbolic in normal saline) and left until sterile, still retain that property. For the next series of experiments, therefore, the vaccines were not heated.

SERIES IV.

This series was divided into two groups of A_4 and C_4.

For Group A_4, ordinary (non-sensitized) unheated carbolized vaccine was used For Group C_4, unheated carbolized vaccine treated, when sterile, with diluted serum from known highly immune rabbits, was used. The dosage was the same for both groups. Each group was divided into two lots. Each rabbit in lots 1 got two doses only, 50 million for the first dose, and, ten days later, 100 million for the second dose. Each rabbit in lots 2 got, in addition, a third dose, 400 million, ten days after the second dose.

Of 14 rabbits that formed group A_4, 2 did not survive the first dose. In 1 *post-mortem* examination showed that the fatal issue was complicated by pseudo-tuberculosis. The remaining 12 were divided into two lots, as above. Six rabbits (lot 1) all survived their second dose. Six rabbits (lot 2) all survived their second and third doses.

Three weeks after their last dose of vaccine, lots 1 and 2 got test doses as follows: Of lot 1, 3 got 500 million living, intravenously, and 3 got 1,000 million; all survived. Of lot 2, 3 got 1,000 million living, intravenously—all survived; 3 got 2,000 million—2 survived and 1 died as a result of this test dose.

Of 14 rabbits that formed group C_4, 3 did not survive the first dose. The remaining 11 were divided into two lots. Six rabbits (lot 1) all survived their second dose. Five rabbits (lot 2) all survived their second and third doses.

Three weeks after their last dose of vaccine the 6 rabbits of lot 1 got test doses as follows: 3 got 500 million living intravenously, and 3 got 1,000 million; all survived.

The rabbits of lot 2 did not get test doses of living bacilli, but, as above mentioned, all survived their third dose of vaccine, while of two controls that got the same dose both died.

ANALYSIS OF RESULTS.

1. *Toxicity of Vaccines.*

This may be measured by the percentage of rabbits that died during immunization. Eliminating those rabbits in which the fatal issue was complicated by pregnancy, abortion, or by well marked chronic disease, we find that in our attempts to immunize rabbits with heated vaccines—Series I to III inclusive—

24.2 per cent. succumbed to ordinary non-sensitized vaccines.
43.3 per cent. succumbed to vaccines sensitized with normal horse serum.
39.4 per cent. succumbed to vaccines sensitized with diluted specific Shiga-agglutinating serum.

The numbers on which these percentages are based, namely, 33, 30, and 33 respectively, are small, but are approximately the same for each of the vaccines. Again, most of the deaths occurred after the first dose in Series I and II, and when the dosage was modified, as in Series III, the results were:

No death in 8 during immunization with ordinary non-sensitized serum.
No death in 8 during immunization with vaccine sensitized with normal horse serum.
1 death in 10 during immunization with vaccine sensitized with diluted specific Shiga-agglutinating serum.

With unheated vaccines only one series—Series IV—is available, and applying the same process of elimination as before, we find that

1 death in 13 occurred during immunization with non-sensitized vaccine.
3 deaths in 14 occurred during immunization with sensitized vaccine.

Toxicity may also be measured by the severity of general symptoms and by the effect on the weight of those animals that survived. Data on those points do not appear in the above summary of experiments, but it may here be stated in general terms that the bowel symptoms were most severe in Group C_1, where the vaccine used was sensitized before it was heated; that where comparatively large doses of heated vaccines were used the severer

symptoms referable to the central nervous system were most marked after "sensitized" vaccines, and that loss of weight was most marked after ordinary "non-sensitized" vaccines, but that this was less noticeable in Series IV, where the vaccines were unheated and where the dosage was less.

2. *Immunity Conferred.*

The fact that the numbers available for this analysis are still smaller and more unequal for each group than for the first analysis must be borne in mind when expressed in percentages. Although the conditions varied in each series, they were the same for each group of each series, so that, with the proviso made above with regard to percentages, we may quite fairly compare the "sensitized" and "non-sensitized" vaccines in respect of the immunity conferred.

First, then, considering Series I to III (heated vaccines) together, the numbers protected against the test doses given were:

In "A" group (ordinary non-sensitized" vaccine), 20 out of 23; or approximately 87 per cent.
In "B" group (vaccine sensitized with normal horse serum), 14 out of 16; or approximately 87 per cent.
In "C" group (vaccine sensitized with diluted specific Shiga-agglutinating serum), 17 out of 20; or 85 per cent.

But if we take Series III by itself the figures are:

In "A" group, 4 protected out of 6.
In "B" group, 7 protected out of 8.
In "C" group, 8 protected out of 9.

With unheated carbolized vaccines, only Series IV, consisting of two groups (Group A_0, in which ordinary non-sensitized vaccine was used, and Group C_0, in which the vaccine was treated with diluted serum from rabbits known to be highly immune), is available. The number of rabbits treated is small, but the results, so far as they go, indicate that, quite apart from sensitization, unheated carbolized vaccines give better immunity than vaccines that have been heated at 56° C. for one hour.

Local Reaction.

In the rabbit, in doses that can safely be given, the local reactions following Shiga vaccines are quite negligible. The rabbit, therefore, is not a suitable animal in which to study and compare the local reactions of Shiga vaccines. With *living* Shiga bacilli the case is different, and the following experiment may be cited as showing the difference in local reaction caused by the subcutaneous inoculation of large doses of *living* Shiga bacilli in immune as compared with that in unprotected rabbits.

1. Two healthy unprotected rabbits (Reference Nos. 14 and 15) got subcutaneously 2,000 million and 4,000 million of living Shiga bacilli respectively. On the following day there was in No. 14 a soft, prominent swelling of the subcutaneous tissues at the site of inoculation, and the skin over the centre of the swelling was purplish-red in colour. In No. 15, the swelling at the site of inoculation was somewhat more prominent, and the skin over it was mottled purple and red in colour. No. 15 died on the fourth day, and No. 14 on the fifth day after the inoculation. In both cases the skin over the centre of the swelling had necrosed, and on cutting into the swelling a central slough about ¼ in. thick at its centre, and thinning off towards the periphery, was exposed. The area of the necrosed skin and the slough were somewhat more extensive in No. 15 than in No. 14.

2. Two rabbits (Reference Nos. 3 and 6) that had each survived a dose of 200 million prepared vaccine on December 14th, 1914, were afterwards treated as follows. Each got on January 13th, 1915, 200 million, on January 20th 400 million, on January 27th 800 million, and on February 3rd 1,600 million of ordinary killed Shiga vaccine that had been heated at 56° C. for one hour. On May 27th No. 3 got 2,000 million and No. 6 got 4,000 million of *living* Shiga bacilli subcutaneously. In each case there was on the following day a soft puffy swelling of the subcutaneous tissue and some redness of the skin at the site of inoculation. Two days later the swelling was less puffy and the skin was less red. Ten days later there was still some puffy swelling in the case of No. 3 and a firm elongated swelling in the case of No. 6. The skin over the swellings was normal in appearance; the swellings themselves were much reduced in size and later on gradually disappeared. Both rabbits remained well.

The above results suggest that the local reaction following the injection of vaccines used for therapeutic purposes in patients suffering from the disease—at all events, in chronic cases or in cases that have lasted for some considerable time—may be mild compared with that in normal persons, and workers using exclusively any particular vaccine for therapeutic purposes only may be misled as to its probable local reaction if used prophylactically in normal persons.

At the King George Hospital I understand that ordinary Shiga vaccine has been given to patients suffering from chronic dysentery of the Shiga bacillary type without its producing any local reaction, in doses that in normal persons have produced severe local reactions.

SUMMARY AND CONCLUSIONS.

1. *Toxicity.*—The toxicity of the vaccines studied has been determined by the liability of the initial dose to kill the experimental animals; and in those that survived by the severity of general symptoms, but more especially by the effect on the weight of the animals during the period of immunization.

In the series of animals in which moderate and large initial doses of vaccines were given, it was found that serum-treated vaccines were more fatal than untreated vaccines, and in the case of animals in which comparatively small initial doses were given the numbers are not sufficiently large to warrant us drawing a conclusion on this point.

With heated vaccines, bowel symptoms were most severe after the vaccine that had been treated with diluted specific Shiga-agglutinating serum *before* being heated. Symptoms referable to the central nervous system were, on the whole, most severe after serum-treated vaccines.

Serum-treated vaccines produced less loss of weight than untreated vaccines, but this was less noticeable in Series IV, where the vaccines were unheated and the dosage was less.

2. It has been found necessary to diminish the initial dose of vaccine in each succeeding series of rabbits, and the results obtained encourage the view that an initial dose at once relatively non-toxic and still able to immunize may be hoped for, though such a dose has not yet been established.

3. The first dose is the critical dose with all the vaccines used. Even with 50 million as a first dose, no less than four healthy animals died out of twenty-seven, while none died after 100 million given as a second dose.

4. The second dose should not be greater than twice the size of the first dose, though this ratio (1 : 2) may be exceeded in subsequent doses.

5. Heating should be avoided in the preparation of Shiga vaccines. It does not reduce their toxicity, and it destroys the antigen that calls forth the complement fixing body. Moreover, unheated vaccines may be sterilized by weak carbolic, freshly prepared, without losing the above-mentioned antigen; and these unheated carbolized vaccines gave in our experiments a better immunity.

6. Immunity, as tested by the power to withstand lethal doses of living bacilli given intravenously, was obtained with serum-treated and with untreated vaccines in apparently about equal degree. Whether the immunity obtained by the one is more lasting than that obtained by the other was not determined.

7. *Local Reactions.*—The rabbit is not a suitable animal on which to study and compare the local reactions caused by dead Shiga vaccines.

THE Accademia dei Lincei of Rome has awarded the King's prize of £400 for human physiology to Dr. Filippo Bottazzi, professor of physiology in the University of Naples. He is the author of a treatise on physiological chemistry and of memoirs on the metabolism of the red corpuscles, and other subjects.

IT has been arranged to hold the Oxford Ophthalmological Congress as usual this year. It will assemble at Keble College on the evening of July 12th. The whole of the following day will be devoted to a discussion on the relation of ophthalmology to general medicine, to be opened in the morning by Sir William Osler and in the afternoon by Sir Anderson Critchett. Further particulars can be obtained from the honorary secretary, Mr. Bernard Cridland, Salisbury House, Wolverhampton.

NOTES ON DYSENTERY VACCINATION.

BY

ALDO CASTELLANI, M.D., M.R.C.P.

DYSENTERY vaccination is of such great practical importance that one wonders that so little attention, comparatively speaking, has been paid to it since the pioneer work of Kruse and Shiga. Such vaccination has never been used to any large extent, owing, I believe, to the following reasons:

1. Vaccines containing the Shiga-Kruse bacillus, prepared according to the usual technique (broth cultures killed by heat), give an extremely severe local and general reaction. I have seen persons incapacitated for work for more than two weeks after such inoculation. In the lower animals, too (rabbits), such vaccines produce very severe symptoms and sometimes death.

2. A vaccine prepared with Shiga-Kruse bacillus does not give immunity for forms of dysentery due to Flexner, Flexner-like, and other dysentery germs.

Peptone-Water Mixed Vaccine.

The only way to obviate these two drawbacks is to prepare the Shiga-Kruse vaccine by a method which will decrease its irritating properties, and to use a mixed vaccine instead of a mono-vaccine. I have carried out experiments on the subject since 1903 and 1904. In the *Ceylon Medical Reports* for 1904 I published the results I arrived at in that year. I stated that as the anti-dysentery vaccine prepared with broth cultures gives rise to very severe symptoms, great tenderness and redness of the skin, very often enlargement of the neighbouring glands, and fever, which may be very high, it had occurred to me to use peptone water cultures instead of broth cultures. This simple modification of the technique was most satisfactory; the irritating properties of the vaccine practically disappeared without apparently any distinct decrease in its immunizing power. I did not think this result was merely due to the fact that peptone-water cultures contained a smaller number of bacteria than broth cultures.

Preparation.

The Shiga-Kruse bacillus and three species of dysentery-like germs (paradysentery), common in Ceylon, were grown in peptone-water tubes for three days at blood temperature. They were then kept for one hour at the temperature of 60° C. Using all aseptic precautions, the different cultures were mixed in this proportion:

Dysentery	5 parts
Paradysentery No. 1	1 part
Paradysentery No. 2	1 ,,
Paradysentery No. 3	1 ,,

The resulting mixture was the vaccine, of which I inoculated 1 c.cm. (sometimes ½ c.cm.), the injection being repeated one or two weeks later.

The inoculation was followed in most cases by practically no local symptoms. In other cases it was followed after five or six hours by mild signs of reaction—some little tenderness and redness of the skin at the place of inoculation. In some instances the temperature rose to 100° or 101° F.

The conclusions I came to were that the inoculation of the mixed peptone-water cultures vaccine was harmless and that the blood of the inoculated persons agglutinated the *Bacillus dysenteriae* (Shiga-Kruse) and the various strains of paradysentery with which the vaccine had been prepared, though the agglutinins were in small amount and disappeared after a short time.

Carbolized Mixed Dysentery Vaccine.

Since 1912 I have prepared and used in Ceylon a carbolized mixed dysentery vaccine, consisting of an emulsion of Shiga-Kruse, Hiss Y bacillus, original Flexner bacillus, a Flexner-like bacillus No. 1, isolated in Ceylon, a Flexner-like bacillus No. 2, also isolated in Ceylon.

Preparation.

The individual vaccines are prepared by making emulsion from twenty-four hours agar cultures, in normal salt solution (0.75 per cent.), to which 0.5 per cent. of carbolic acid had been added. All particulars of the technique are given in my previous papers on the subject of mixed dysentery vaccines. The individual vaccines are standardized as follows per c.cm.:

Shiga-Kruse bacillus	1,000 million.
Flexner bacillus	1,000 ,,
Hiss Y bacillus	1,000 ,,
Flexner-like No. 1	1,000 ,,
Flexner-like No. 2	1,000 ,,

These vaccines are mixed in equal parts, so that 1 c.cm. of the mixed vaccine will contain 125 million of each of the organisms used.

Of this vaccine, 0.5 to 0.6 c.cm. is given hypodermically the first time, and the same amount after a week. The reaction is not very severe, though more marked as a rule than after the typhoid-paratyphoid vaccine. Agglutinins generally develop for all the germs of the dysentery group which have been injected, but their amount is not high, the agglutination limit seldom being higher than 1 in 40, and is somewhat inconstant and irregular; but the same may be said of individuals inoculated with simple mono-vaccines, Shiga-Kruse, Flexner, etc.

Combined Typhoid+Paratyphoid A+Paratyphoid B +Dysentery.

This combined vaccine, on which I have published several previous papers, consists of an emulsion of Shiga-Kruse, Hiss Y bacillus, original Flexner bacillus, a Flexner-like bacillus No. 1, isolated in Ceylon, a Flexner-like bacillus No. 2, also isolated in Ceylon, typhoid bacillus, paratyphoid A bacillus, and paratyphoid B bacillus.

Preparation.

The individual vaccines are prepared by making emulsions from twenty-four hours agar cultures in normal salt solution (0.75 per cent.), to which 0.5 per cent. of carbolic acid has been added.

The individual vaccines are standardized as follows per cubic centimetre:

Typhoid bacillus	4,000 million.
Paratyphoid A bacillus	1,000 ,,
Paratyphoid B bacillus	1,000 ,,
Shiga-Kruse bacillus	1,000 ,,
Flexner bacillus	1,000 ,,
Hiss Y bacillus	1,000 ,,
Flexner-like bacillus No. 1	1,000 ,,
Flexner-like bacillus No. 2	1,000 ,,

These vaccines are mixed in equal parts, so that 1 c.cm. of the mixed vaccine will contain 200 million of the typhoid bacillus and 125 million of each of the other organisms used.

Of this vaccine, 0.5 to 0.6 c.cm. is given hypodermically the first time, and the same or double the amount after a week. The reaction is severer as a rule than after the typhoid-paratyphoid vaccine. As regards agglutinins, the agglutination for the germs of the dysentery group is not high, the agglutination limit seldom being higher than 1 in 40; it is also somewhat irregular and inconstant, but to a certain extent the same may be said of individuals inoculated with simple Shiga-Kruse, Flexner, etc., mono-vaccines. Typhoid, paratyphoid A and paratyphoid B agglutinins, on the other hand, are produced in fair amount, though as a rule distinctly less than in control individuals inoculated with simple typhoid, paratyphoid A and paratyphoid B vaccines.

CONCLUSIONS.

1. A dysentery vaccine should contain several species of dysentery bacteria, and not one only.

2. As I have stated in all my publications since 1904, the vaccine should never be prepared with broth cultures, as such vaccine often gives a most serious reaction with very severe infiltration and occasionally an abscess.

3. The vaccine should be prepared with a carbolic salt emulsion from agar cultures without heating, or peptone-water cultures may be used. Of sensitized dysentery vaccines I have little experience.

4. It is essential to prepare the vaccine with strains which, though rich in antigen, are not virulent, or very little so. It is very rare to come across such a strain of the Shiga-Kruse germ. A large series of strains of this organism should be inoculated in rabbits, and the least virulent, provided it be rich in antigen, should be kept permanently as a stock culture to prepare the vaccine.

REFERENCES.

Castellani: *Ceylon Medical Reports*, 1904; *Centr. f. Bakt.*, 1909; *Journal*, Ceylon Branch British Medical Association, November, 1914; *Reports* to the Advisory Committee, Tropical Research Fund, 1914; *Sperimentale*, April, 1915; Johnson and Milne: BRITISH MEDICAL JOURNAL, January 15th, 1916.

THE DIAGNOSIS OF ABORTIVE CEREBRO-SPINAL MENINGITIS.

BY

M. CULPIN, M.B., F.R.C.S., CAPTAIN (TEMP.) R.A.M.C.,

SURGICAL SPECIALIST, ALEXANDRA HOSPITAL, COSHAM.

ABORTIVE cases of cerebro-spinal meningitis are mentioned in the textbooks, but it is probable that many are overlooked by those whose mental picture of the disease is formed by their experience of the severe type.

In this district last winter the writer was able to

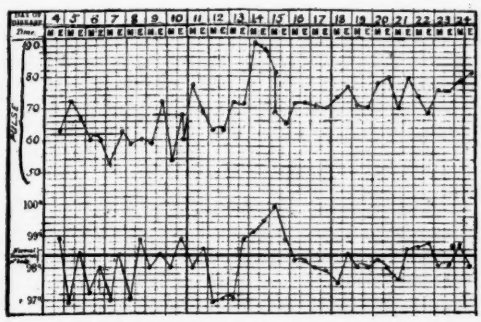


CHART A.—Patient reported sick with headache on the two days previous to admission. Puncture fluid contained diplococci and a few lymphocytes.

observe a series of cases ranging from the fulminant (proving fatal within twenty-four hours) to the mildest type where recovery is apparently complete by the end of a similar period. Though the mild cases form a series continuous with the severe, yet, as the disease assumes a benign form, a certain sign appears which seems of diagnostic value.

This mild or abortive type starts with a headache and evanescent meningeal irritation, as shown by a stiff neck

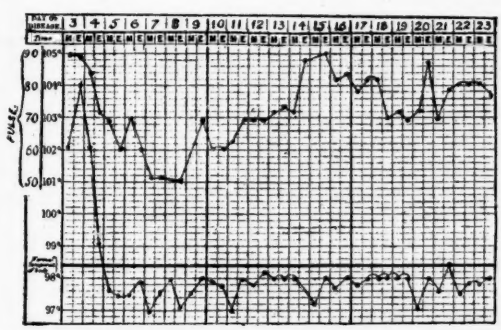


CHART B.—Rigor two days before admission. Pains in head and neck. Face flushed and Kernig's sign present. Puncture fluid apparently normal. Herpes on lips twelve days after onset.

and Kernig's sign. Lumbar puncture at this stage may reveal a few pus cells (chiefly lymphocytes as opposed to the polymorphonuclear cells in the severer cases) and an occasional diplococcus, or may be negative. There is a rise of temperature, to which the pulse-rate is often unrelated, but within two or three days or even less the temperature and pulse become normal and the patient seems well.

If, however, a careful watch is kept the pulse-rate will be found to drop at some time between the second and seventh day after the onset. This drop may be to as low as 60 a minute and often as low as 50, and lasts a variable time, from a few readings only up to a week, with occasional increases. If the patient is allowed up whilst the pulse is slow, he complains of feeling poorly or "fuzzy in the head," and the pulse-rate does not increase.

This sign was almost invariably present in the cases in which there were clinical grounds for the diagnosis, even when lumbar puncture gave a clear fluid.

Slowing of the pulse is said to occur during convalescence from febrile illnesses, but such a slowing as is shown on the accompanying charts seems characteristic of recovery from a mild cerebro-spinal meningitis, and should be useful confirmation of a doubtful diagnosis.

An interesting case occurred in a ward orderly. He reported sick; his pulse-rate was 56; he had no headache, but volunteered a history of a bad headache three days before. His pulse remained slow for a week, and made occasional excursions to or below 60 in the week following, finally reaching his normal rate of about 80. It is probable that other signs would have been found if he had reported sick with his headache. Another man (Chart A) had reported sick on two successive mornings with headache. His medical officer then met the writer, heard his views, and mentioned the case. The man was sent to hospital, and lymphocytes and diplococci were found in his spinal fluid.

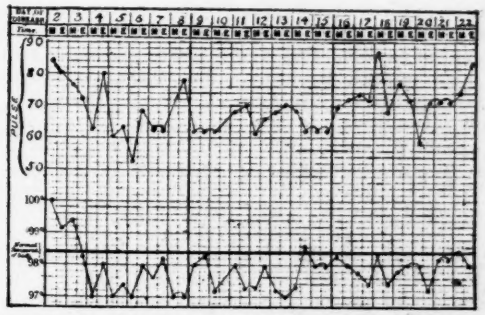


CHART C. Onset day before admission; vomiting and headache. Face flushed; one purpuric spot on his back. Kernig's sign marked. Spinal fluid under pressure; watery, but contained diplococci. Labial herpes three days after onset.

The number of mild cases seen cannot be given, for some were certainly missed early in the epidemic, and there is no definite demarcation from the severe, but one may say that about twelve were recognized which the ordinary observer would not have believed to be a form of meningitis. They seemed commoner at the end of the epidemic, but that may have been because they were more often detected.

It is the opinion of the writer that many escape diagnosis, and it is necessary for the study of the disease

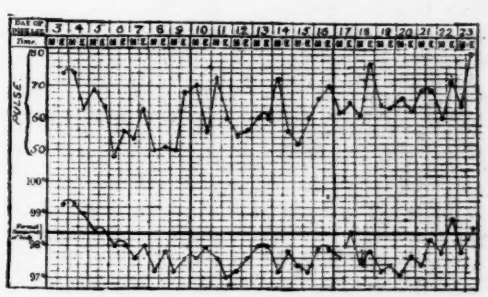


CHART D.—Onset three days before admission. Headache, stiff neck, and Kernig's sign. Puncture fluid apparently normal.

that they should be detected; it is for this reason that these observations are placed on record to be confirmed or confuted.

I have to thank Captain Leon, R.A.M.C.(T.), for the bacteriological work in connexion with the whole series of cases.

THE seventh Pan-American Medical Congress, recently held at San Francisco, passed resolutions calling for the appointment by the various American Governments of a Commission for the systematic investigation of the medicinal flora of America. The view was expressed that this investigation should be conducted in connexion with recognized universities, hospitals and laboratories in the various countries, and in the instance of each article investigated should embrace: (1) A description of the plant; (2) its botanical classification; (3) its habitat, including the possibility of acclimatization and cultivating; (4) methods of gathering and transportation; (5) alkaloidal and other chemical properties; (6) present uses, domestic and professional; (7) pharmacological investigation, with experimental and subsequent clinical data; (8) the probable value of the plant as an article of commerce; (9) additional facts of value as may be demanded by the Commission or determined by individual investigators.

Reports of Societies.

FEMALE NURSES IN MALE WARDS OF MENTAL HOSPITALS.

At a meeting of the Medico-Psychological Association in London on February 17th Dr. George M. Robertson, physician-superintendent of the Royal Edinburgh Asylum, Morningside, and lecturer on mental diseases in the University of Edinburgh, read a paper on the employment of female nurses in the male wards of mental hospitals in Scotland. After recalling that he had opened a discussion on the subject at the annual meeting of the association ten years ago, and observing that the shortage of male attendants in asylums had again made the consideration of the plan urgent, he gave a historical sketch of the growth of opinion on the subject. Auxiliary female care had been introduced into the Gloucester Asylum in 1841 by Dr. Samuel Hitch, who employed the wives of his married charge attendants to help their husbands. In 1883 Dr. R. M. Bucke, of the London Asylum in Canada, had employed widows in the male wards with complete success. Sir Thomas Clouston, who had placed a married couple in charge of the Male Hospital at Morningside, when the husband died in 1890 appointed the widow in full charge, and placed the male attendants under her authority. The defect of the system of auxiliary female care was that the nurses were few in number, and only assisted the male attendants, the bulk of the nursing even in those wards in which they were employed being still done by the male attendants.

The first step towards the system by which a group of male patients was entirely nursed by women was taken by Dr. Turnbull in the Fife and Kinross Asylum in 1896; he placed a ward containing thirty male hospital patients entirely under the charge of female nurses by day. Supervision was exercised by the matron and the charge nurse of the female hospital. The Scottish Commissioners realized the value of Dr. Turnbull's innovation, and on the advice of Sir John Sibbald a similar arrangement was introduced into the Glasgow (Gartloch), Lanark, and Perth District Asylums. In 1900, Dr. Robertson said, he had placed a group of male patients at the Stirling District Asylum under the charge of female nurses by night as well as by day. The Scottish system of entire female nursing was totally different in practice from that of auxiliary female care, and all who had large experience of women nurses in male wards agreed that they were infinitely more useful if placed in sole charge of a group, and they much preferred it themselves. The desire to make use in asylums of the high standard of skill in nursing possessed by those trained in general hospitals had led to the appointment of large numbers of trained hospital nurses during the last twelve years to important positions in the Scottish asylums; for, unfortunately, men did not receive training in nursing in the general hospitals. Dr. Campbell Clark was the first to appoint, at the Kirklands Asylum, Bothwell, in 1880, a trained hospital nurse to be matron. In the following year he began the systematic teaching and training of his asylum nurses and attendants. In 1885 the Scottish division of the Medico-Psychological Association published a handbook for attendants on the insane, which was subsequently adopted by the association, and had led to the granting of the certificate for proficiency in mental nursing and to the registration of certificated mental nurses.

The first hospital nurse to work within the wards among insane patients and asylum nurses was appointed by the speaker at the Perth District Asylum in 1896. This step not only had its direct influence on ward work, but created a supply of hospital nurses specially trained for the duties of asylum matronship. So great did the demand become that three dozen of his own nurses had received such appointments in other institutions. Nurses accustomed to attend to male patients in the general hospitals thought it the most natural thing to continue to take charge of male patients in asylums, and their presence had led to the introduction of innumerable reforms which had approximated the methods employed in the asylums to those in the hospitals, and the greater employment of women in the male wards was only one among these. The employment of female nurses in the male wards in Scotland was, in fact, only a part of a much greater ideal—that of the hospitalization of the asylum. Nursing by women was now as distinctive and firmly established a feature of the Scottish system of care for the insane as the boarding-out system. It was employed in some measure in all but two of the important asylums of the country, and in these exceptions failure to introduce it was not due to opposition to the principle but to structural difficulties. In a fourth of the asylums in Scotland, and among them some of the large ones, the matron was head of the staff on the male side as well as on the female side.

In introducing female nurses into the male wards for the first time the most reliable women on the staff should be selected. They should be experienced and should not be young. The working unit should not be less than four, and it was a great advantage to place a hospital nurse with asylum experience in charge of them. They were best adapted to manage wards containing patients confined to bed. When the patients were dressed and going about it was advisable to employ one or two trustworthy male married attendants to bathe the patients and to assist in other ways. It was not true that female nurses were only of use in the care of the sick and helpless in an asylum. They usually exercised more control over cases of mania than male attendants, and their success was due to the fact that their method was based on persuasion and not on force or compulsion. A woman had much the same influence over an insane man not actually delirious as she had over one supposed to be in his sound mind, and it was absurd to assume that all feelings of chivalry and honour died in a man because he suffered from some derangement of the mind.

The capacity of the insane for education in good habits, while not illimitable, was very extensive, and in practice was never exhausted in large institutions. If it could be alleged of any asylum that its male wards were not a suitable place for women, then the sooner a reformation was effected the better, for it was not a condition that need continue indefinitely. Male patients were always less troublesome and excitable than female, and women found that they received more courtesy and readier obedience from men than from women. It was not necessary to pay an extra salary, for once the system was started the women were engaged as in general hospitals, simply to nurse, and it was all in the day's work whether their patients were male or female. It was doubtful whether the employment of women instead of men would mean any saving in expense, because, owing to the higher standard of hospital care sought, usually a larger number of nurses was required. In Scotland any saving had been more than counterbalanced by the increased night staff, which was proportionally much larger than that employed in English asylums and on hospital nurses for purposes of supervision, a practice now largely adopted. Lastly, it has been said that many male patients, owing to their sexual proclivities, could not be cared for by women. This was undoubtedly true, but the remedy was simple—do not place them under women; let them be cared for by men. No experienced administrator would allow a simple difficulty of this kind, with an obvious remedy, to deter him from the introduction of women nurses. Every day of the year, in every asylum in the country, a much more difficult and responsible task of an analogous nature was faithfully performed—that of distinguishing the patients who were suicidal from those who were not, and of making special arrangements for their care. To pick out patients whom it was undesirable to place under the care of women was, compared with this, an exceedingly simple matter.

Nursing the sick, the infirm, and the helpless, sane or insane, was pre-eminently woman's avocation, and Sir Thomas Clouston had summed up the situation tersely when he said that all his nurses longed to work in the hospital, whereas all his male attendants preferred outdoor work. Moreover, women were better than men at the superintendence and discharge of domestic duties. The proportion of women it was desirable to employ on the male side of an asylum was, according to the Scottish Board of Control, at least 25 per cent. of the total day staff on the male side and 15 per cent. of the night staff. These figures were considerably exceeded in several asylums, among which might be mentioned the Stirling District Asylum. It might be taken as a typical county

asylum in the accommodation it provided, in its complete organization, and in the modern methods it employed. It admitted over 250 patients annually, and had a resident population of over 800. Dr. R. B. Campbell, its medical superintendent, had employed for the last seven and a half years, as the speaker did for an equal period, a staff on the male side by day of which 40 per cent. consisted of women, there being three hospital nurses, including the matron. By night 27 per cent. of the staff consisted of women, including the night superintendent, who is a trained hospital nurse.

Dr. Robertson said that he did not accept the contention that female nurses were more suitable for asylums admitting parochial than for those receiving private patients. Craig House, the department of the Royal Edinburgh Asylum for private patients, was a separate mental hospital, and of the staff of 32 employed by day to attend to 100 gentlemen exactly one-half consisted of nurses, including in this number the lady superintendent and 3 matrons, and of these 3 were hospital nurses. At night 6 out of a staff of 13 consisted of women, including the night superintendent, who was a trained hospital nurse. The proportion of women varied, and had perhaps been swelled by the war, but there was no difficulty in employing 40 per cent. of women by day and 25 per cent. by night in a private asylum.

In the discussion which followed some criticism was heard, but on the whole a striking amount of agreement with Dr. Robertson's contention. Dr. STODDART said that the employment of male nurses in male wards was an anachronism, but he would prefer women nurses who possessed the association's special certificate as mental nurses, for they would be superior to ordinary hospital-trained nurses for the work. Dr. WOLSELEY LEWIS agreed; he was not in favour of hospital-trained nurses, as the conditions were very different in asylums. Dr. SOUTAR, while thinking that male attendants should not be employed in hospital duties, had not found them so deficient in the capacity to nurse as to feel justified in ousting them. Sufficient importance did not seem to have been attached to the fact that in asylums physically fit patients rendered various kinds of assistance. Dr. SARGENT, after trying a wholly male staff, and finding it a failure, had, after a short period of partial employment of females, appointed a wholly female staff. Dr. LEGGE, from a careful study of the Scottish system at the time when his committee decided to build a new asylum, had become convinced that the system advocated by Dr. Robertson was much ahead of the general system used in England. In the Derby asylum 90 per cent. of the patients were put straight into the wards and nursed by women both by day and night. Dr. BRANDER said that he had found male patients objected to being nursed by women, and in any case disapproved of the employment of mixed staffs. Dr. HAYES NEWINGTON thought it would be dangerous to accept the principle that women were essential as nurses on the male side, although he recognized that female influence was very useful on that side. Ambulatory male patients should not be placed solely in the charge of women. Dr. O'NEILL considered that it was essential at first to have hospital-trained nurses to instruct beginners in the proper conduct of a ward. In seven years' experience of female nurses for male patients he had not met with difficulties, nor had he seen any evidence of depreciation of the moral tone of the nurses. The President Lieutenant-Colonel DAVID G. THOMSON, M.D., considered that the plea for female nursing of male patients was sound within very definite limitations. It was not possible to make the case of the asylum precisely parallel to that of a hospital.

BOTHRIOCEPHALUS LATUS.

AT the meeting of the Section of Pathology of the Royal Academy of Medicine in Ireland on January 21st Dr. T. T. O'FARRELL showed a specimen of *Bothriocephalus latus*, believed to be the first detected in Ireland. It had been supplied to him by the Right Hon. M. F. Cox, M.D. The patient, a man who resided on the banks of the River Shannon, in co. Longford, had suffered for some time from vague symptoms of indigestion, but had no pronounced anaemia. He passed the first segments of tapeworm in December, 1915. The usual anthelmintics were given. The head had not been found, but the smallest segments had been recovered. The man had always resided in Ireland, except for three trips to England and two to Scotland, each of about five or six days' duration. On these occasions he did not partake of fish. He had frequently eaten fish from the Shannon—perch, pike, bream, roach, and eels—but no trout so far as he remembered. The fish had not been undercooked, and others had eaten of it without becoming infected. [It may be added that the ordinary host is the pike, and that Leuckart does not mention the trout.]

Rebielus.

VAGOTONY.

THE vagus nerve, like the nerves of the somatic system or sensorimotor nerves, is constantly transmitting tonic impulses to the viscera it serves—namely, the heart, bronchi, oesophagus, stomach, intestine, and pancreas. In a general way, it may be said that the drugs pilocarpin, physostigmin, and muscarin increase the force of these tonic impulses, while atropin depresses them and tends to produce vagal paralysis. Drs. EPPINGER and HESS[1] have endeavoured to isolate from the mass of nervous disorders known as the neuroses a group of patients in whom the neurosis is due to abnormally great tonus of some of the involuntary muscles or secreting tissues supplied by the vagus nerve, and have published their results in a pamphlet of which Drs. Kraus and Jelliffe have recently issued an English translation. Such a vagotonic patient, it is stated, is abnormally sensitive to the subcutaneous injection of pilocarpin; the dose of 1 cg. ($\frac{1}{6}$ grain), producing sweating and salivation, and such other signs as hyperacidity, eosinophilia, asthma, slow pulse and respiratory or cardiac arrhythmia, and spastic constipation. If the case is one of vagotony, these signs and symptoms will be relieved by the exhibition of atropin.

Vagotonic patients are said to exhibit a rapid and forcible ("nervous") action of the heart when the precordia are inspected. Gastric hypersecretion and hyperacidity, and their extreme form gastrosuccorrhoea or Reichmann's disease, with pylorospasm and increased peristalsis and antiperistalsis, and cardiospasm and oesophagospasm, are all common in vagotony and may habitually be relieved by giving atropin. Vagotony may produce either constipation or diarrhoea, by increased intestinal peristalsis or by intestinal spasm; the authors believe that some cases of spasm of the gall bladder and bile ducts are due to vagotony without local organic disease. Finally, they mention eosinophilia as developed on a vagotonic basis; it may be evoked by pilocarpin and dissipated by atropin, and is entirely lacking in patients with the opposite condition of sympathicotony or abnormal tonus of the muscles and glands mainly innervated by the sympathetic nervous system. The skin of vagotonic patients flushes easily and perspires freely; the patients are thin (this is a great fault in Vienna) but have large, often beautiful eyes which glisten; the heart is excitable, the reflexes are very brisk, the urine is often hyperacid, gastric and intestinal derangements are common. Persistence of the thymus and the lymphatic constitution are not rare; indeed, vagotony is summed up as a form of constitutional inferiority. It will be seen from this brief and incomplete review that the authors make the conception of vagotony cover a very wide clinical field; with what success is a question that the future will decide. Many of the authors' far-reaching conclusions seem to be based on deductions drawn from only a case or two, and to be quite unwarrantable as generalizations. They do not appear to state the doses of atropin required to relieve the main symptoms of vagotony.

The translators have done their work fairly well; a note should be added on p. 4 to the effect that in English-speaking countries the autonomic nervous system—a term introduced by Langley in 1898—means the nervous system of the glands and of the involuntary muscles, and includes

[1] *Vagotonia: A Clinical Study in Vegetable Neurology.* By Dr. H. Eppinger and Dr. L. Hess of Vienna. Authorized translation by Drs. W. Max Kraus, A.M., M.D., and Smith Ely Jelliffe, M.D., Ph.D. Nervous and Mental Diseases Monograph Series, No. 20. New York: The Nervous and Mental Disease Publishing Co. 1915. (Roy. 8vo, pp. 93. 1 dol.)

the sympathetic nervous system. Drs. Eppinger and Hess describe Langley's "autonomic" as the "vegetative" nervous system, and divide the vegetative into the "sympathetic" and the "autonomic" nervous systems, thus perpetuating a very confusing and unnecessary difference in terminology.

PROGNOSIS.

WE have formed a high opinion of the value of the *Index of Prognosis and End-results of Treatment*, edited by Dr. A. RENDLE SHORT,[2] which is issued as a companion to the *Index of Treatment* and the *Index of Differential Diagnosis*. As the title indicates, it aims particularly at setting forth the end-results of various methods of treatment, their advantages and their risks, while it also furnishes data for arriving at accurate forecasts of what will happen to an individual patient. Although we admit that there is justification for the claim that this volume stands by itself and that no modern work in the English language can compare with it, yet we do not agree with the complaint that little help in prognosis is given by current textbooks, which generally include prognosis in their descriptions of diseases, and although they do not always support their conclusions by "trustworthy figures," they do so in many instances—as, for example, in the treatment of typhoid fever, diphtheria, gastric ulcer, and of cerebro-spinal fever, to give only a few instances. It may be true that the published results of individual surgeons are often "touched with *couleur de rose*," but the compilers of textbooks are not open to this reproach, and such published figures have been subjected over and over again to analysis by hospital registrars and others, so that it is only the reports of a quite new method which may mislead by being unduly favourable; this must continue to be the case so long as enthusiasm for what is believed to be progress persists, and should it be lost we fear that with it would also disappear the ardour of mind that has brought about the real advances of the last fifty or sixty years.

We have carefully read many of the sections, and where all are good it may seem invidious to select any for special praise; yet we may mention those on angina pectoris, appendicitis, exophthalmic goitre, heart disease, tuberculosis of the genital and urinary organs, and diseases of the stomach. We repeat the favourable opinion with which we opened this notice, and desire to commend the work to our readers as one which they would do well to place upon their bookshelves.

HINDU THOUGHT.

IN his work, *Indian Thought, Past and Present*,[3] Mr. FRAZER has compiled an exhaustive treatise on a very abstruse and difficult subject. After an introductory chapter he first discusses the Vedas, "the dawn of thought," dating back to the first Aryan invasion of India, 2,000 to 1,500 B.C.; then he deals with the philosophic studies of the Brahmanas, and explains their view of the Pythagorean doctrine of transmigration. After next giving an account of the Upanishads, or books of secret knowledge, he describes in successive chapters various schools of thought—of Vedanta, the world as illusion, *maya*; Sankhya, the world as matter; Vaiseshika and Nyaya, the world as atoms; lastly, Yoga, or asceticism. The longest chapter—nearly half of the whole work—relates the rise, sway, and decline of Buddhism. In the next chapter, on (modern) Hinduism, the author discusses the proposal, now passed into an Act, for the institution of a Hindu University at Benares, with a faculty of Hindu theology; points out the similarity between the Biblical story of Christ and Herod and the Hindu legend of Krishna and Kans, and considers the possible Christian origin of the latter; he next compares the tenets and practice of the two chief Hindu cults—the worship of Vishnu the Preserver, and of Siva the Destroyer. The third member of the Hindu Trinity, Brahma, the Creator, has no extensive following; only two temples in his honour exist in India. The next chapter deals with the past and present position of woman in India, while the last describes the Hindu thought of the present day, with the foundation of the Brahmo Samaj by Raja Ram Mohan Roy in 1828; and of the Arya Samaj by Dayananda Swami in 1875.

Perhaps "Hindu Thought" would have been a more accurate title than *Indian Thought*. Islam is barely mentioned. It may be said that all Indian thought is Hindu. The Musalman is usually a practical person, whose religious doctrines are crystallized in the *Quran*, and is little given to deep speculation, either philosophic or religious, yet between one-fourth and one-third of the population of India is Musalman, and many of the more virile races follow the creed of Muhammad. Very little also is said of Sikhism. Belief imported from abroad, the author considers, is foredoomed to failure. Buddhism, Islam, and Christianity have left Hinduism almost unaffected.

The author speaks of the "sting" of a snake (p. 232, last line). Snakes do not sting, they bite. Another slip occurs on p. 301, where it is said that the latest Marriage Act, the "Age of Consent" Act, was passed in 1891 by the Government of Lord Lawrence. This should be Lord Lansdowne. Lord Lawrence's viceroyalty was a quarter of a century earlier. The illustrations are well executed, and most of them are beautiful.

NOTES ON BOOKS.

IN his little book on *The Dietetic Treatment of Diabetes*[4] Major BASU gives an account of the etiology and treatment of a disease that is, for one reason or another, very common in India. There is nothing very abstruse in the text, which draws its strength largely from quotations from the works of Pavy, von Noorden, and other standard authorities on diabetes mellitus. The book is designed for the use of the inhabitants of India, and it may be warmly recommended to their attention as a short and practical manual.

A brief and breezy account of the life spent by an Englishwoman nursing in a French military hospital is furnished by DOROTHY CATOR.[5] who points her moral and adorns her tale by many incidents showing the vices and the virtues of both the French and the English. It seems that if the French have much to learn from us about the management of hospitals, we in turn may learn much from them as to the graces of life and daily dealings with one another. The authoress was shocked by the dirt and lack of religious principle she found in France; she is still more shocked by the national conceit and inability to learn that now, she fears, threaten to drive England definitively to the dogs. The book is good reading, and appeals to the layman rather than the medical practitioner.

The Log of H.M.S. Bristol[6] seems to be exactly what it professes to be—namely, a diary kept by a leading signalman during the commission from May, 1914, to December, 1915. She was part of Admiral Sturdee's squadron at the Falkland Islands, but when the action began was detached with the *Macedonia* to sink two colliers, which they did, taking off 109 prisoners. Afterwards the *Bristol* took part in the four months' search for the *Dresden* in the Magellan Straits. This meant a great change of climate, for in the earlier part of her commission the *Bristol* was sent to keep an eye on the Mexican revolution, in which, at that time, the world was much interested. Unfortunately, the ship went aground in one of the narrow channels in the Straits, damaging her rudder so badly that another had to be extemporized under great difficulties. The account of the incident gives a good idea of the emergencies the engineering branch may have to face at any moment, and the skill and perseverance with which they are met. The book is well worth reading not only for the historical events in which the ship and the writer took part, but also because it gives a plain picture of life at sea during war, its long weeks of monotony and short hours of excitement.

[2] *An Index of Prognosis and End-results of Treatment.* By Various Authors. Edited by A. Rendle Short, M.D., B.Sc.Lond., F.R.C.S.Eng., Captain R.A.M.C. Bristol: J. Wright and Sons, Ltd. London: Simpkin, Marshall, Hamilton, Kent, and Co., Ltd. 1915. (Demy 8vo, pp 578. 21s. net.)

[3] *Indian Thought, Past and Present.* By R. W. Frazer, LL.B., I.C.S. (ret.). London: T. Fisher Unwin, Ltd. 1915. (Demy 8vo, pp. 339; illustrated. 10s. 6d. net.)

[4] *The Dietetic Treatment of Diabetes.* By B. D. Basu, Major I.M.S. (retired). Sixth edition, revised and enlarged. Bahadurganj, Allahabad: The Panini Office. 1915. (Cr. 8vo, pp. 108. Rs. 1.8.)

[5] *In a French Military Hospital.* By Dorothy Cator. London: Longmans, Green, and Co. 1915. (Cr. 8vo, pp 99. 2s. 6d. net.)

[6] *The Log of H.M.S. Bristol.* By Wm. Buchan, Leading Signalman. London: The Westminster Press. 1916. (Cr. 8vo, pp. 163; illustrated. 4s. net.)

The *British Journal Photographic Almanac for 1916*,[7] edited by Mr. G. E. BROWN, gives a summary of the recent progress of photography, and is an up-to-date guide in all photographic matters. It contains a compendium of practical hints gathered from British and foreign journals, and an excellent account of the various printing processes explained in such a way as to be intelligible to beginners. British firms are now thrown very much on their own resources in the manufacture and supply of photographic material of all sorts; indeed, some of these firms appear to have transferred their energies to the manufacture of munitions. There appears to be nothing of interest to skiagraphers in the *Almanac*, which came out first as long ago as 1860. It should be in the hands of every photographer, professional or amateur.

[7] *The British Journal Photographic Almanac and Photographer's Daily Companion, 1916*. Edited by G. E. Brown. London: H. Greenwood and Co., Ltd. (Cr 8vo, pp 982, illustrated. 1s. net.)

MEDICINAL AND DIETETIC PREPARATIONS.

A New Intestinal Antiseptic.

IN a paper recently read to the members of a Connecticut medical society Dr. J. T. Ainslie Walker brought forward a new intestinal antiseptic which, he claims, is really effective. Countless excellent antiseptics have been employed in the past for the purpose of lessening the putrefactive processes that occur normally in the intestine, and when unduly free produce symptoms of disease. To mention only a few out of many, calomel, mercuric sulphide, salol, resorcin, various bismuth salts, beta-naphthol, and naphthalene tetrachloride have all had their vogue as intestinal antiseptics, and all have proved failures in the hands of the great majority of medical practitioners. As a result of this we have seen other methods of lessening intestinal sepsis recommended and practised, notably the use of the lactic acid bacillus advocated by Metchnikoff and the more drastic surgical procedures of Sir Arbuthnot Lane. The new drug so strongly recommended as an intestinal disinfectant by Dr. Walker is a benzene derivative, 1-2-4-5-6-trimethylmethoxyphenol, with the formula $C_6H(CH_3)_3(OCH_3)OH$. He does not mention how it is formed or where it may be obtained. It is administered by the mouth in the form of 2½ minim gelatine capsules containing a 50 per cent. admixture of the drug with a vegetable base, and alternatively as a syrup, for infants and children unable to take the capsules. A 50 per cent. gelatine emulsion of the drug is known for short as "trimethol." It is stated to have a Rideal-Walker coefficient of 20, or in other words to be twenty times more efficient than pure phenol as a germicide, and is not, it is said, decomposed in its passage through the alimentary tract, and is excreted unchanged in the faeces. It appears from the cases quoted by Dr. Walker that up to twenty of the capsules of trimethol described above may be given to an adult daily; offensive diarrhoea, enteritis, ulcerative enteritis, mucous colitis, and ulcerative non-amoebic dysentery are mentioned among the intestinal disorders in which the new drug proved strikingly effective. As every medical man knows, intestinal sepsis is nowadays credited with being the *fons et origo* of many diseases that may at first sight appear to have little connexion with it—rheumatoid arthritis, for example, and pernicious anaemia. Dr. Walker certainly makes out a good case for the further trial of trimethol in both acute and chronic septic disorders of the intestine.

ROYAL MEDICAL BENEVOLENT FUND GUILD.

ANNUAL GENERAL MEETING.

THE annual general meeting of the Royal Medical Benevolent Fund Guild was held at the Mansion House, London, on February 21st, the LORD MAYOR (Sir Charles Wakefield) presiding. Lady TWEEDY read the report of the council, in which reference was made to the success of the sale of work at Crewe House last November, by which more than £1,000 was added to the funds of the Guild. During the year written reports had been made upon 400 cases—a "case" often meaning a family—which had been referred by the Fund to the Guild. Mrs. LIVEING, in an account of the work of the Visiting Committee, mentioned that as a result of the war the Guild was called upon to deal with many widows and children who, in happier times, would never have dreamed of asking for such assistance. Mrs. SCHARLIEB made the treasurer's statement, from which it appeared that the income of the Guild during the year, including the proceeds of the Crewe sale, was £3,726; £1,500 of New Zealand stock had been purchased, and the special education fund now stood at £300.

Sir ARTHUR MAY, K.C.B., Medical Director-General, said that when the war was over it was possible that the outlook for benevolent organizations would not be so black as some were inclined to depict it. Many a wall of prejudice would have been broken down, and charity would have a wider gate. The Guild stood especially to benefit from the new social impulse, for the public support would be given to those societies which had under their care cases of distress arising directly out of the sacrifice of the individual in the war. Speaking for his own branch of the service, he said that the navy was at concert pitch, and to this state of affairs, which was a matter less of material than of personnel, the medical department had very largely contributed. Notwithstanding the hardships of the long vigil, the health of the fleet to-day was better than it had ever been since statistics were taken. At least half the medical men now serving in the navy had left civilian practice during the last eighteen months. No profession stood to lose so much by service with the forces as did the medical profession, simply because it was a profession which depended to so great an extent upon personality. Patients were notoriously fickle, and it was possible that by the time the doctor returned to civil life he would have to rebuild his practice almost from the beginning. Time after time since the war began he had been approached by medical men, who had said, "I would join to-morrow if it were not for my wife and children." In such cases he used no pressure, but many men had left family and practice to come and do their share. Before the war the insufficiency of medical men in the navy had been a great shadow upon his mind, but it had been lifted by the splendid manner in which civilian doctors had come forward. They were serving to-day in every theatre of war, and it was for those who remained at home to do their utmost to relieve from possibility of want the dependants of these men should the breadwinner be called upon to make the final sacrifice.

Dr. JAMES CAMPBELL MCCLURE said that medical men were not much given to looking to the morrow, partly because the temperament which led a man to the medical profession was the reverse of that which tempted a man to business, and partly because the training of the medical student encouraged on the one hand a scientific abstraction and on the other an altruistic spirit. This temperament and training, combined with many social demands made upon the young doctor, furnished the necessity for the Fund and Guild. The world was often surprised to find how little a doctor had bequeathed, forgetting that the few years of prosperity which had preceded his death had been spent only too often in the liquidation of debts incurred during his years of struggle. Dr. McClure suggested that appeals for this benevolence should have a place in every hospital and college; and Dr. LOUISA GARRETT ANDERSON, in a later speech, made the further suggestion that grateful patients should be asked to help by a donation, instead of offering the silver tankard or cigarette case which sometimes figured as a personal gift to the family doctor.

On the motion of Sir WILLIAM CHURCH a vote of thanks was accorded to the Press, more especially the medical Press, for space granted to the work of the Guild, and the meeting closed with compliments to the Lord Mayor and Lady Mayoress voiced by ADELINE, DUCHESS OF BEDFORD, and Sir JOHN TWEEDY.

THE Secretary of the London (Royal Free Hospital) School of Medicine for Women has forwarded to us a prospectus explaining the arrangements for dental students. The Royal Dental Hospital of London School of Dental Surgery, Leicester Square, and the University College Hospital dental department and school (National Dental Hospital) are both open to women students. That part of the course only which is not obtainable at the dental school and hospital is taken at the Royal Free Hospital school. The prospectus explains the course of study, which occupies a minimum period of four years subsequent to registration, and includes three examinations.

British Medical Journal.

SATURDAY, FEBRUARY 26th, 1916.

SIR WILLIAM TURNER.

Sir William Turner throughout an active life which exceeded the common span exerted a great but often silent and unseen influence on the development of medicine in this country. His influence was due in part to a strong intellect, in part to his own example of diligence and continuity in scientific research, and in still larger part perhaps to a staunchness of character which made it impossible to imagine that he could ever be blown about by any wind of doctrine.

For more than sixty years he was actively concerned with medical education. For almost half a century he taught anatomy in the University of Edinburgh, and how great he was as a teacher is shown by the list of his pupils who are now teaching anatomy all over Greater Britain. All that time he had been impressing his ideals and his character not only on his pupils, but on the whole of that great university, until, when he was 71, he was called to be its chief executive officer. As was characteristic of him, he had long before this made himself thoroughly acquainted with the business of the university in all its aspects, and by so doing had incidentally broadened his own outlook on medical education. It was in the fitness of things that the university should have sent him quite early to represent it on the General Medical Council, and that that body after experience of his qualities should have chosen him to be its President. As Sir Donald MacAlister says in the tribute he pays to his predecessor elsewhere in this issue, Sir William Turner had to face a somewhat difficult position. Things were going askew with the Council in more than one respect, and there was not wanting much depreciatory and destructive criticism. Turner met it not by retorting, but by quietly and steadily setting to work to right what was wrong. He succeeded by being just and constant, keeping an open mind, and not letting prejudice imported on either side bias his judgement; he had, as his successor says, the judicial mind, and that perhaps sums up his outstanding quality as no other phrase could.

To his scientific work he brought this same quality of mind and with the like success. No doubt his appointment in the prime of early middle life to the chair of human anatomy in Edinburgh gave him a very great opportunity—there was no like opportunity in Great Britain at that day—but his was the merit of taking full advantage of it and realizing fully how it was to be used. It was a moment when the science of human anatomy needed a leader of the comprehensive and accurate mind and breadth of outlook which Turner pre eminently possessed. The enthusiasm that had impelled and sustained the older students of human anatomy was dying away: their method had been worked dry to the dregs. Two new currents of thought were beginning to flow. Harvey, first of the great British anatomists, and, after a long interval, Bell, had shown the course along which one stream was to run—the application of experiment to anatomy, hitherto a science of pure observation. Its course had then already brought it close to physiology, and now no clear line can be drawn between the two. The other current was towards comparative anatomy and anthropology—to the study of man's relation to the rest of the animal world, to his ancestors, and of races to each other. Both currents combined to carry human anatomy into the broad stream of biology. It was to the second stream that Turner committed himself and most of his original work; without detraction from his contributions to comparative anatomy it may be said that it was in anthropology that his work and his influence was most fruitful. To the influence of his teaching is largely due the eminent position of British anthropology—its richness in detail, grasp of principles and boldness in speculation, qualities in which its only rival is the French school. We are fortunate to be able to publish this week a tribute by Professor Arthur Keith which deserves that much abused epithet "eloquent." The facts are eloquent in themselves, and the truth of his summing up will, we believe, be more and more appreciated: that "the most marvellous aspect of the whole" of Sir William Turner's "career was his ability to combine a life of extraordinary scientific industry with one laden with administrative duties."

PENSIONS AND ALLOWANCES ON DISABLEMENT BY DISEASE.

Many instances have been brought to public notice of soldiers and sailors who have been discharged from the army or navy on account of constitutional weakness, without prospect of pension or other national recognition of the services that they may have rendered. The whole question of the responsibility of the State for the future care of its defenders of all ranks was brought prominently forward by an amendment to the Address moved by Mr. W. Thorne in the House of Commons on February 16th to the effect that the Government should accept responsibility for the payment of pensions and allowances to all soldiers and sailors discharged on account of diseases contracted or developed during service with the colours. In his brief speech the mover asserted that it had been stated that it was not possible to pay pensions to soldiers or sailors discharged for medical defects. He questioned the right of the Government to refuse such pensions, and maintained that a recruit, once passed as medically fit and accepted for service, should, even if serving only for home defence, be entitled to the same treatment as the wounded man from the front, if he should be incapacitated by disease.

The debate served to emphasize the strong feeling which animates both public and official circles that the spectacle shall not again be permitted of the disabled defenders of their country reduced to poverty and want. The action of the War Office and the Admiralty has hitherto been guided by the terms of a Royal Warrant and of an Order in Council, and these terms admit of varied interpretation. The parliamentary representatives of both services expressed the earnest desire to interpret them sympathetically, but at the same time indicated that discretion must also be regarded.

Breakdown in health from constitutional causes, such as a tendency to rheumatism or tuberculosis, may occur in military as well as in civil practice, and it is equally difficult, if not impossible in many cases, for medical authority to forecast the liability to such breakdown.

More especially is this the case with regard to tuberculosis. Many members of Parliament would still seem to have overlooked the fact that a large proportion of the population become infected, at some period of childhood or adolescence, with tuberculosis. The most careful and prolonged medical examination may fail to detect evidence of the latent disease, although it may at any time become active. It does so far more frequently in the person of the sedentary clerk in his office than in that of the similar individual transferred to the active open-air life of the camp. The hardships and dangers of life under fire have undoubtedly been followed in some instances by a recrudescence of tubercle, countless examples have been forthcoming of the invigorating effect of the strenuous open-air life upon young men of slender physique who have been thereby converted into hardy soldiers. A large proportion of such men must be potentially tuberculous, but it is wholly beyond the powers of medical boards, however carefully constituted, to say whether such potentiality will ever become active.

The establishment of a statutory committee to make provision for the care of disabled officers and men after they have left the service will doubtless provide a court of appeal in difficult cases, but it is not to commence operations until next July. In the meantime the National Relief Fund and the Soldiers' and Sailors' Families Association are available to deal with urgent cases.

It was made quite clear in the course of the debate that, while the terms under which pensions and allowances are granted must be adhered to, they will be liberally interpreted, but such liberality will not extend to the cases, of which there must of necessity be a certain proportion, in which the breakdown occurs within a short time after enlistment. Medical boards, often working at high pressure to examine recruits, are not infallible, and the principle that the Government must make itself responsible for the future care of every one who passes the doctor is too sweeping for acceptance. Many of the speakers were inclined to adopt the interpretation of the Workmen's Compensation Act as defining the liabilities of the Government with respect to pensions and allowances, but the general outcome of the discussion upon the amendment, which was withdrawn, did not indicate more than a general desire on the part of the speakers for sympathetic treatment of hard cases, and a willingness on the part of the Government to accord it.

ARMLETS AND ATTESTATION.

THE attention of all medical men who are single and under the age of 41 next birthday, and who are enrolled with the Central Medical War Committee, is called to the fact that they can only obtain armlets under the Derby scheme if they are attested. The period for attesting terminates automatically when the provisions of the Military Service Act come into force on Thursday next, March 2nd. It is important, therefore, that every medical man to whom the above description applies, and who wishes to be in a position to wear an armlet, should make arrangements to attest within the next few days. Attestation, with the consequent right to wear the armlet, will make it clear that the wearer has, while the voluntary system is still in force, shown his readiness to serve his country when called upon to do so.

MEDICAL STUDENTS AND THE MILITARY SERVICE ACT.

IN consequence of the passing of the Military Service Act, 1916, the Army Council has issued an instruction modifying the procedure to be followed in the case of medical students as provided under the Derby scheme.[1] The instruction will be distributed in recruiting subareas, and directs that all medical students in their fourth or fifth year of study, and those in their third year of study whose examination takes place during the winter session, must either attest under the group system or become liable to the Military Service Act. A student who attests under the group system should produce a certificate signed by the dean of the faculty of his college, to the effect that he is enrolled in an officers' training corps, and is either a fourth or fifth year student, or a third year student to be examined during the winter session. A fourth or fifth year student will not be called upon, while a third year student will be postponed to April 15th, 1916. In their case, recruiting officers on that date are instructed to ask the dean of the college concerning the result of the examination. If the student has passed he will not be called up; if he has failed he will be called up, provided the group to which he belongs has been called up. A student who does not attest under this, the voluntary, system becomes liable to the provisions of the Military Service Act, and must appeal to the local tribunal if he desires exemption. A certificate from the dean of the faculty of his college stating that he is enrolled in an officers' training corps, whether he is a third, fourth, or fifth year student, and if a third year student that he is to be examined during the winter session, must be attached to the claim, and military representatives are instructed to assent to such claims subject to the provision, in the case of the third year's student, as to the examination being passed during the winter session. On April 15th the military representatives will apply for the withdrawal of the exemption certificates of third year students who have failed in their examination. The order is dated February 20th, 1916 (No. 389, Military Service Act).

MEDICAL EXAMINATION OF ENROLLED MEDICAL MEN.

THE following is the text of an instruction which is being addressed to the Deputy Directors of Medical Services in Commands: "In connexion with the question of the enrolment of medical men for service with the army, it has been decided that local arrangements shall be made for the physical examination of all medical men who are so enrolled. The Central Medical War Committee have accordingly been instructed that they, or the local committees, may arrange direct with you for the examinations to be carried out at the nearest recruiting board. Each candidate should be required to complete Army Form W. 3075, and in case of unfitness the reasons should be stated on the certificates. When the cause of unfitness is defective vision, the degree of vision with and without glasses should be stated. The certificate and Army Form W. 3075 should be returned to the local committee, and will be forwarded by them to the Central Medical War Committee or Scottish Medical War Emergency Committee, who in turn will send these documents to the office."

CEREBRO-SPINAL FEVER IN 1915.

ACTING in collaboration with the War Office, the Medical Research Committee has recently issued a full and interesting report[2] upon the bacteriological studies of cerebro-spinal fever made by a number of specially competent observers at twenty-four separate stations in England during the first eight months of the year 1915. The report is divided into five parts. The first of these is concerned with the biological properties of the meningo-

[1] SUPPLEMENT TO BRITISH MEDICAL JOURNAL, January 15th, 1916, page 9.

[2] Report of the Special Advisory Committee upon Bacteriological Studies of Cerebro-spinal Fever during the Epidemic of 1915. Medical Research Committee, London. 1916. (6d.)

coccus, the organism still accepted by practically all bacteriologists, as the report states, as the infecting agent in cerebro-spinal meningitis. Discussing the evidence adduced by Dr. Hort and his collaborators[1] to show that Weichselbaum's meningococcus is a highly pleomorphic organism—perhaps a "late non-infective phase" of a microbe which may be a filter passer—the authors of the report do not agree with any such views; they characterize the "pleomorphism" rather as "involution." They make many interesting observations on the difficulties of identifying the meningococcus, due in part to the fact that it exists in many different immunological strains or races, or even in forms so different from one another as to deserve the name "subspecies." No finality has been reached as yet in this matter; in the same way no finality has yet been reached in the formula of the culture medium best suited for the rapid isolation or identification of the meningococcus. At the present time a pea-flour-agar medium, known as "trypagar," is probably the best for this purpose, though it leaves much to be desired. It is noted that nasal mucus, saliva, and other organisms such as pneumococci and streptococci, all tend to inhibit the growth of meningococci on culture media, an obvious further embarrassment in the search for the microbe on swabs from the nose or throat. Regarding the bacteriological diagnosis of cerebro-spinal fever, the report speaks of the invariable presence of polymorphonuclear leucocytes in the cerebro-spinal fluid during the active stages of the disease, and emphasizes the fact that they make their appearance here very early in the disease. This is of interest as not being in accord with the early cerebro-spinal lymphocytosis described by Netter, Sophian, and others, as of frequent occurrence. It is noted that the meningococcus can be grown from the circulating blood in only a small proportion of the cases, and those the most acute; yet the authors of the report believe that the route of infection in cerebro-spinal meningitis is habitually from the pharynx to the meninges by way of the blood stream. They hold that it is but rarely excreted by the kidneys. Part III of the report is given to an analysis of the very extensive investigations of the problems raised by meningococcus carriers that have been made. Roughly speaking, 6 or 7 per cent. of carriers were found in a total of over 10,600 contacts examined, the percentages found by different observers varying from 1 to 20. As regards treatment, the general conclusion reached is that the meningococcus carrier will recover spontaneously almost as fast as with the most careful local or general treatment; vigorous local treatment is certainly undesirable. In Part IV the epidemiology of the disease is discussed from the bacteriological point of view; overcrowding and deficient ventilation are described as the chief factors in the spread of cerebro-spinal fever among soldiers. The incubation period is indefinite, varying from three days to three weeks and probably longer. The authors regard the meningococcus as essentially a saprophyte with a low virulence for the average human being, excluding infants; in times of epidemic cerebro-spinal fever individual races of meningococci must be assumed to attain a greater virulence that enables them to produce meningitis in young adults who in ordinary circumstances are immune. There is evidence to show that at least one of the three principal meningococcal strains concerned in last year's epidemic was introduced by the Canadian troops. Part V of the report deals with the specific treatment of the disease, the results of which have certainly been disappointing. The reason for this no doubt lies in the multiplicity of the meningococcal strains that are abroad among us. The use of hexamine and soamin has been no more successful. This report is one that should be read by all who wish to keep abreast of our knowledge of cerebro-spinal fever.

[1] See BRITISH MEDICAL JOURNAL, 1916, i, 159.

EUGENICS AND THE WAR.

EUGENISTS who had been anticipating some speculations on the effect of the war on the race were a trifle disappointed with Professor E. B. Poulton's Galton lecture delivered last week. His subject was "Eugenic Problems after the War," but he seemed to feel, with the Walrus, that the time had come to talk of many things, and after touching on the revolting eugenic effect of a German victory, he proceeded to rejoice in the shattering of the party system in this country, and also to denounce the neglect of science and scientific education by the governing bureaucracy. The voluntary basis of recruiting was another matter which came under his ban. He described it as being contrary to all the principles of eugenics, particularly in the absence of proper selection and classification, and the absence also of authority to decide that the energies of a man of certain scientific attainments would be better employed in the laboratory or classroom than in the trench. The present struggle had been compared in its social upheaval to the Civil War, but Professor Poulton thought that the Civil War, engaging as it did only thirty thousand or so combatants on each side, while the rest of a populous England looked on, had nothing like the impact which this war would have upon our generation. He conceived it the most pressing business of the Eugenics Education Society to unite with the scientists of every department in doing their utmost to see that, in the new form of government that was coming, science should have its proper recognition. Sir E. Ray Lankester, in moving a vote of thanks to the lecturer, agreed that the British Government was ignorant of, and therefore hostile to, science in all its branches. The ignorance extended from the highest Minister to the humblest official in the civil service. The real trouble, as he conceived it, was the servitude to snobbery. We were willing to see every post of importance go to no matter whom, provided he belonged to the right set, wore the right kind of collar, and had been to the right school. Professor E. W. Macbride, while almost equally severe in his criticism, thought that the lack was not so much the fault of the officials as of the way in which they had been brought up. Major Darwin, who presided, said that while it would be pleasant to believe that all suffering could be swept away by social reform, it was necessary to make the best of the world as it was. Just as brothers differed, so each generation might show an advance or a decline in comparison with that which preceded it, and social conditions would not prevent degradation if the inborn qualities of a nation were deteriorating. He quoted the saying of Lincoln: It is "for us to be here dedicated to the great task remaining before us"; that is, in the first place to winning the war, and then to seeing "that this nation, under God, shall have a new birth of freedom"; and added that Galton would have said that increasing freedom and racial degeneracy never marched hand in hand. If London was a little disappointed, the Liverpool branch of the society could not have felt that the address of its president last week in any way lacked in vigour. That stormy petrel, Sir James Barr, spared neither the working man nor the capitalist, but demanded that the Government should apply conscription all round in the interests of the nation. During the last eighteen months, he said, it had not merely been business as usual, but a large portion of the population, especially the middlemen and distributors, had striven to see how much they could make out of the war, a liberal donation to a charitable war object, and a good investment of profits in the war loan being sufficient to salve their consciences. The tax on war profits should not be confined to capitalists, but should extend to those unpatriotic wastrels who had been on strike for an extra penny an hour, while the brave men in the trenches were not getting a penny an hour. Officers barely got a living wage, and yet a cool and calculating Government deducted

a war income tax from their salaries. Could base ingratitude go much further? In conclusion, he said that the nation must prepare for the great trade war which was certain to follow as day followed night. All must be imbued with the spirit of work and the dignity of labour, for success would largely depend on the British working man.

WAR ORTHOPAEDICS.

THERE will be found at another page (318), in the course of a letter describing some of the medical work being done in Paris, an account of a demonstration given by Major Robert Jones of Liverpool at the Franco-American ambulance, Neuilly, which is still busily employed by the French military authorities. The staff of the ambulance got together a set of cases of gunshot wound of the upper arm, and Major Jones gave a sort of clinical lecture on the means which should be taken to place the limb in the position most favourable to its recovery with as large a degree of useful function as possible. After dealing with injuries of the shoulder-joint likely to end in a greater or less degree of ankylosis, and with fractures of the forearm, he went on to consider wounds involving the wrist. He advised that the joint should be kept in hyperextension (dorsal flexion), for should a stiff wrist result from the injury, the grasp of the fingers would be much stronger than if the hand were bent towards the flexor surface of the forearm. This position also affords a much better chance of securing a return of power in cases of wrist-drop. In them not merely the carpus and metacarpus but the whole palmar surfaces of the fingers should at first be supported; later on the length of the digital portion of the splint should be lessened as the patient regains power of extending the terminal phalanges by voluntary effort. The condition of wrist-drop, one of the causes of which is tight bandaging, is generally accompanied by malposition and excessive callus, it is amenable to the same line of treatment; the understanding of the condition has, perhaps, been confused by the term "ischaemic paralysis," which Volkmann applied to it, or to one form of it. When the condition is fully developed the fingers are contracted into the palm; the first thing to do, then, is to flex the wrist to the utmost and to straighten the fingers to the splint. When the fingers have been straightened to the palmar splint by degrees wrist and hand are extended and gradually hyperextended, a process which may take some months. In this way the contracted flexors are lengthened, and the stretched extensors relaxed. In the later stage massage and heat may be applied. Such cases are among those which go for treatment to the great hospital for men with crippled limbs which the French Government has established in the Grand Palais in Paris, described by Drs. Fortescue Fox and Campbell McClure at page 319. We have already on more than one occasion ventured to call attention to the extreme importance of orthopaedic treatment for men suffering from the crippling effects of wounds of bones and joints; especially is this the case when regarded from the economic point of view. A man, for instance, with a dropped wrist and stiff flexed fingers is quite incapable of following most trades, whereas if he retains control over the fingers he can, even though his wrist is stiff, execute many fine movements almost as well as a sound man, and can therefore become a useful member of the community. We believe that the army medical authorities are fully alive to the importance of early and efficient treatment of such cases, and we are quite certain that such treatment will not only render happier the lives of the men who undergo it, but will be an immense economic advantage to the country, to say nothing of the saving to the Exchequer in the matter of pensions.

BRONCHOSPIROCHAETOSIS.

A VALUABLE contribution to our knowledge of bronchospirochaetosis has been made by Dr. G. A. Lurie of Chicago, who gives a full account of the malady, illustrated by a report of a case he observed in Serbia.[1] The affection was first described by Castellani in 1905, who gave a description of its etiological agent, which he called *S. bronchialis*. Branch in 1907 confirmed Castellani's observations in the West Indies, and Jackson in 1908 in the Philippine Islands. In 1909 Waters recorded several cases in India, and Phalen and Kilborne a case in the Philippine Islands, where in 1911 Chamberlain described two cases. Recently numerous cases have been recorded in various parts of Africa by Chalmers, O'Farrel, Taylor, Harper, Macfie, and others; Fantham has made a very complete protozoological investigation of the spirochaete causing the disease, and has observed a coccoid stage. The spirochaete usually has tapering ends; it is very variable in length, thickness, and number of waves. Flagella are apparently absent. Dr. Lurie, following Castellani's classification, distinguishes three types of the disease—the acute, the chronic, the subacute. In the acute type the patient feels chilly and then develops fever, which lasts for a few days and is seldom very high. The expectoration is scanty and muco-purulent. Chronic bronchospirochaetosis may follow an acute attack, but more often the onset is slow and insidious. The expectoration is muco-purulent and may contain blood. Occasionally true haemoptysis is observed. The temperature may be normal, or there may be fever of hectic type. The physical examination is often negative, but, in certain cases, signs of slight consolidation may be detected. The general condition of the patient may remain fairly good for a long time, but occasionally wasting is rapid. The course is a long one, extending over several years, with periods of great improvement. The case observed in Serbia by Dr. Lurie belonged to the subacute type, the disease lasting for some months. The diagnosis of the malady is based on the microscopical examination of the sputum, which should be collected as free from saliva as possible and after the patient has gargled with sterile water. The spirochaete is generally present in very large numbers. The condition is distinguished from tuberculosis by the absence of Koch's bacillus; from bronchomycosis by the absence of hyphomycetes; and from endemic haemoptysis by the absence of ova of *Paragonimus westermanii*. Cases of mixed infection may occur. The prognosis is generally good, *quoad vitam*, but the disease may run an extremely long course. As regards treatment, Dr. Lurie emphasizes the great value of arsenic, as recommended by Castellani; Fowler's solution in his case gave very gratifying results.

ACETONURIA AND ACIDOSIS.

THE name "acidosis" was applied by Naunyn to the excretion of acetone, aceto-acetic acid, and beta-hydroxybutyric acid. Acidosis is of interest to the clinician because its occurrence, associated with diminished alkalinity of the blood, has been held to explain obscure occurrences such as diabetic coma and delayed chloroform poisoning. To the physiologist acidosis is of interest because the output of acetone and its congeners affords him the only clue he possesses to the faulty metabolism of fat. These substances are excreted mainly in the urine, and the influence of various diets and of periods of starvation on their excretion has recently been submitted once more to examination, by Dr. R. M. Lang,[2] with a view to casting fresh light upon the vexed question of their origin. In describing the experimental methods he employs the author notes that the solution of basic lead acetate habitually added to the urine in the course of such analyses

[1] Notes on Castellani's Bronchospirochaetosis, with report of a case, *Journal of Tropical Medicine*, December 1st, 1915.
[2] *Biochemical Journal*, Cambridge, 1915, ix, 455.

as these may of itself be a source of small amounts of acetone, when Shaffer's method of determining the acetone bodies is employed. Indeed, the error thus introduced may amount to over 100 per cent. in the case of normal urines; Dr. Lang has worked out figures showing the corrections that should be applied to eliminate this source of error in Shaffer's method. He finds that the quantity of acetone bodies excreted by the normal individual on a diet containing a sufficiency of carbohydrate is influenced chiefly by the protein in the food, and averages from 10 to 30 mg. a day. The output is much increased by starvation; the amount excreted during the first few days of starvation depends on the initial storage of carbohydrate and increases as soon as the ratio of the fat to the carbohydrate oxidized in the body becomes greater than about two to one. The administration of quite small amounts of carbohydrate to the starving organism brings about a great reduction in the acidosis, though relatively large amounts are required to stop it; protein acts less well and less rapidly than carbohydrate, as does glycerol, while alcohol is without effect here, and the exhibition of fat actually increases the acidosis. Dr. Lang concludes that when acetone bodies are excreted in excessive amounts they are for the most part derived from fat; he found that on the third day of a diet consisting of 320 grams of olive oil the urinary excretion of acetone and aceto-acetic acid reached over 0.8 gram, while the beta-oxybutyric acid was nearly 1.3 gram in the twenty-four hours. The diet, it may be remarked, proved both nauseating and depressing, and on the evening of the third day the breath was found to contain acetone in the proportion of something like 9 mg. an hour. The greater amount of the acetone, so called, in acetonuria is excreted in the form of aceto-acetic or diacetic acid; hence the term "acetonuria" might properly be replaced by the name "diaceturia," as Piper proposed in 1913. Dr. Lang also brings forward some evidence in favour of the possibility of the conversion of fat into carbohydrate in the human body, comparable to that which takes place in the hibernating mammal.

SIMPLES AND TISANES.

No English practitioner who has followed his profession on the Continent can fail to have been struck by the extensive use made of popular medicinal herbs as adjuvants to medical treatment properly so called. In England the preparation of infusions, decoctions, extracts, and liniments of herbs is now handed over to the manufacturing chemist, but there is a wide difference between the diuretic action of acetate or citrate of potash with infusion of buchu in the ordinary 6 oz. mixture and that of the same salt administered by the French method in a cupful of hot, freshly-prepared infusion, or the expectorant qualities of oxymel of squills and ipecacuanha given in a hot infusion of linseed and liquorice. From the time of Hippocrates the value of the ingestion of hot water in the treatment of febrile affections has been recognized and the prescription of herbal infusions and decoctions is, in the main, only a device for the purpose of inducing the patient to swallow the hot liquid, just as antisepsis is in great measure a device for securing cleanliness. Not one French patient in a dozen could be persuaded to drink a quart of hot water in the twenty-four hours, but if it be provided in the form of a herbal infusion, duly flavoured and sweetened, no difficulty is experienced. In the whole realm of medicinal nature there is no more active salutary diuretic and diaphoretic than hot water, and the physiological action of the latter is free from any drawback, whereas that of powerful drugs such as nitre, pilocarpine, sparteine, and the like, is often attended by injurious collateral effects. The absorption of the hot liquid and its free evacuation by the emunctories is a form of lavage of the tissues, stimulating metabolism, and ridding the organism of microbial toxins and organic waste products. The French pharmacopoeia contains upwards of 200 *tisanes*, and no scheme of treatment is thought complete unless it provides for the ingestion of an adequate quantity of tisane. Instead of ordering "mist. alb.," the French doctor administers some Epsom salts or sodium sulphate in a hot infusion of senna, camomile, vervain, peppermint, or limeflower, with, on the whole, much more satisfactory results. In many parts of England a decoction of poppy heads and camomile is commonly employed as a fomentation for injured limbs, and its first aid use is cordially recommended by the doctors, since if it does nothing more it secures cleanliness of skin. Let, us then, administer the bromides in a fresh infusion of valerian; nitre or ammonium acetate in a hot infusion of marsh mallow, couch grass, or pellitory; expectorants in a decoction of tussilage, pine buds, or serpentary; and a diuretic of potassium acetate in an infusion of elder flowers, saponaria, or borage. A cupful of hot vervain or camomile after dinner is an excellent carminative and facilitates digestion, and there are still people who like these draughts. Our professional forefathers were adepts in this matter, and in mediaeval art the physician was usually represented scanning a sample of urine or culling herbs:

> Excellent herbs had our fathers of old,
> Excellent herbs to ease their pain—
> Alexanders and marigold,
> Eyebright, orris and elecampane,
> Basil, rocket, valerian, rue
> (Almost singing themselves they run),
> Vervain, dittany, "call-me-to-you"
> Cowslip, melilot, rose-of-the-sun;
> Anything green that grew out of the mould
> Was an excellent herb to our fathers of old.

COBRA VENOM.

THE action of cobra venom is generally supposed to be exerted in part on the central nervous system and in part on the terminations of the motor nerves. In a paper presented to the Royal Society on February 17th Professor A. R. Cushny, F.R.S., and S. Yagi stated that experiments they had made showed no symptoms of central nervous action in either cold or warm-blooded animals, but that death occurred from paralysis of the motor nerve terminations in striated muscle. In the frog this was accompanied by slowness and finally arrest of the circulation from a direct action on the heart. In mammals the failure of the respiration was due to the paralysis of the respiratory nerve terminations, but this was often accompanied by the inhalation of saliva, which accelerated asphyxia. The heart was also weakened by quantities of venom greater than the minimum lethal dose. A number of antidotes were examined without any great success, because no antidote appeared capable of ejecting the venom from its combinations in the tissues. The action on the peripheral organs was found to consist in a preliminary phase of stimulation followed by paralysis of muscle, whether striated or unstriated. This was common to all forms of muscle whatever the nature of the innervation, so that it could not be attributed to action on the nerve ends. The sympathetic ganglia and the secretory epithelium did not appear to be affected by the venom.

KEDANI FEVER IN SUMATRA.

A CURIOUS complaint, known as pseudo-typhoid fever, occurs in Deli, Sumatra. It is believed to be a variety of Japanese kedani fever, but Schüffner,[1] who has recently reported some cases, states that the transmitting agent of the disease in the two countries, Japan and Sumatra, is different. In Japan a small red mite, the larval form of an unknown *Trombidium*, is known to be the infecting agent; the true host of this mite is the field-mouse, which harbours the parasite, often in large numbers, about the ears. Up to the present Schüffner has been unable to determine

[1] *The Philippine Journal of Science*, vol. x, Sec. B, No. 5.

the transmitting agent of the disease in Sumatra, but he thinks it must be a tick or mite. In 39 per cent. of the cases the original point of infection can be found. In the early stages a papule appears, which soon bursts, leaving a small dark area of blackish necrosed skin some 4 mm. in diameter; five to eight days later the slough is cast off, leaving a small round or oval ulcer with steep edges and the floor covered with muco-pus. Lymphangitis has not been observed, but the lymphatic glands in the neighbourhood of the ulcer are enlarged and tender, sometimes markedly so. The site of the initial lesion varies, but is commonest in the regions of the groins, the armpits, and the neck. The second characteristic symptom of the disease is an eruption which appears on the second or third day, and attains its full development between the sixth and eighth day; it then presents itself as a roseola, the raised spots varying in size from that of a hemp-seed to a threepenny-bit. This eruption closely resembles secondary syphilis; it covers most of the body, being thickly placed on the flanks and less marked on the face and extremities; it persists from eight to ten days longer, then becomes of a brownish colour, and slowly disappears. The temperature is raised, and the course of the fever can best be described by saying that it corresponds in all respects to that seen in enteric fever; it attains its maximum in four or five days, remains high for some time, and then gradually falls by lysis. Of other symptoms diarrhoea is uncommon; albuminuria may be present, and extensive bronchopneumonia has been seen in fatal cases; rheumatic pains are complained of in the smaller joints. The disease in Sumatra is considered to be much less fatal than the kedani fever of Japan. There are many points of resemblance between the two diseases, however; so much so, that the author believes the Sumatra disease to be only a variety of the Japanese.

Medical Notes in Parliament.

War.

Attested Men Found Physically Unfit.—At question time on February 21st the position of unmarried men who had attested and been rejected on medical grounds after August 14th, 1915, was raised, and Sir John Simon, not being satisfied with the answers, brought up the matter again in the debate on the vote of credit. Mr. Tennant, in his reply, said that it was quite clear that persons who had been rejected as medically unfit since August 14th, 1915, were outside the Military Service Act, but it did not follow that they were entitled to an armlet. When application for an armlet was made the War Office was entitled to ask why the man had been medically rejected. If rejected for some minor defect, he might still be of service to the country in other capacities. There was no desire on the part of the War Office to treat patriotic and innocent citizens unfairly. In reply to Mr. Thomas, Mr. Tennant had, on February 17th, stated as follows:

> The conditions under which men can obtain armlets if they have been rejected at a recruiting office were published on December 27th, and are as follow: (*a*) Men who have been rejected on account of organic disease are given an armlet and their names are registered. (*b*) Men who have been rejected on account of eyesight or some slight physical defect are also given an armlet on condition that they will attest and be passed to the Army Reserve. In both cases, if the men can produce Army Form B 2505A and/or Army Form B 2512A showing date and cause of rejection no further examination is necessary, but if the cause of rejection is not stated on the certificate it is necessary to re-examine the man to decide whether he belongs to category A or category B. There is no obligation on any man to submit to a second medical examination unless he is desirous of obtaining an armlet, but to obtain the armlet he must be medically examined unless his rejection certificate shows the cause of his rejection.

Enlistment of Consumptives.—In reply to Mr. Booth, Mr. Tennant said on February 21st that he feared that there was some foundation for the statement that many consumptives had enlisted and thus for a period had relieved the approved insurance societies of sickness pay.

Medical Officers over 45.—On February 22nd Mr. Ellis Davies asked the Under Secretary of State for War whether it was the intention of the War Office that medical men now holding commissions in the Royal Army Medical Corps, being under 45 years of age and unfit for foreign service, should resign the same on the expiration of their present agreement. Mr. Tennant replied: Temporarily commissioned officers of the Royal Army Medical Corps under 45 years of age and unfit for foreign service are not permitted to retain their commissions after the period of service for which they engaged has expired. No further commissions are being given to men under 45 years of age unless they are physically fit for active service. It is hoped by these methods to set free men who are physically capable of undertaking general military duties and who have hitherto been employed in war hospitals in this country or have been engaged in private practice.

Fees for Medical Examination of Recruits.—Mr. Rendall asked whether the scales for payment to medical men for examining recruits (Southern Command Order 507, March 13th, 1915), set forth that for a whole day, defined as six working hours, and the examination of from thirty to forty recruits, the payment of £2 is ordered to be made; that in certain towns the doctors declined to examine more than thirty-one recruits a day, and for this work had been paid the full fee of £2; that in other places doctors worked from nine to twelve hours, and in one case (Dr. Weaver of Yeovil) 226 recruits were examined in fifteen consecutive hours, yet for these long hours and far greater number of examinations only the same fee of £2 was being paid as for the examination of thirty-one patients; whether there was dissatisfaction; and would he order the payment of £2 for each six hours' work and get his medical advisers to put these matters on a business-like footing. The Financial Secretary to the War Office (Mr. Forster) replied that if a few recruits were examined in a day, the fee was 2s. 6d. a recruit. £2 was the payment for a full day's work. In view of the evil results of hurried examination, it was not considered desirable to hold out to doctors pecuniary inducements to examine more than thirty to forty recruits in one day. He was not aware that the profession was dissatisfied with these arrangements. In reply to a written question by Mr. Rendall, having reference to an agreement to pay 2s. 6d. a head made by head quarters, No. 8 District, Exeter, with doctors undertaking to examine recruits in November and December last, Mr. Forster said that he was making inquiries.

3rd Western General Hospital.—In reply to Mr. Haydn Jones, on February 22nd, the Financial Secretary to the War Office said that the army accounts were not kept in such a form as to admit of arriving at the weekly cost of a hospital per bed. The 3rd Western General Hospital (Cardiff) was an administrative unit composed of many different buildings, and contained 2,000 beds. It had a staff of some 32 medical officers, who drew the army pay of their ranks, and of these 19 were local members of the profession, to whom it was open to pursue private practice.

PROFESSOR SYMINGTON, F.R.S., has published in the *Journal of Anatomy and Physiology* for January, 1916, a monograph on endocranial casts and brain-form. He throws much doubt on the conclusions drawn by eminent living anthropologists on "reconstructed" skulls of primitive men by inspecting the endocranial casts of the vault of ten skulls, each prepared with a cast of the related parts of the brain. He has come to the conclusion that the simplicity or complexity of the cerebral fissures and convolutions cannot be determined with any degree of accuracy from endocranial casts even on complete skulls. In no single instance did the fissures correspond to definite depressions indicating their position, and very frequently they were found to lie in various parts of their course over eminences on the cast. If, as these observations seem to show, reliance cannot be placed on endocranial casts from reconstructions of imperfect skulls, then it is not possible to estimate even approximately the relative degree of development of the various sensory and association centres in the cortex from the endocranial casts of the La Chapelle or Piltdown skulls.

THE WAR.

MEDICAL WORK IN PARIS.

CRIPPLED SOLDIERS.

AT the beginning of the war Paris was a great centre of activity for the British army, but after the Marne and the Yser it became of secondary importance in this respect, and not much has recently been published about the work being done there. The following extract from a private letter, dated February 17th, will therefore be read with interest:

. . . Such endless months seem to have passed since Paris first assumed its wartime garb that it is not easy to distinguish between its habits and appearance at the present time and those of the recent past. There are fluctuations, of course, but streets that empty early by night and are free from much bustle by day: the existence of numbers of hospitals in hotels and public buildings; the wearing of dark clothes by womenfolk; and the devotion of their spare time to unostentatious war work, have all grown to seem normal features of existence. Also normal, alas! seems the paucity of the calls made on our time by the wealthy floating population which formerly played so important a part in the professional and business life of permanent residents.

Still in this matter there is rather more variation; at times the larger and more fashionable hotels are quite busy. They were so recently, but were emptied again for the time being by the air raids.

As for the local branch of the British Red Cross Society, it still pursues the even tenor of its useful way. The greatly lessened use of Paris by the British has ended many of the calls previously made upon its energies, so it has reduced the number of its employees and the size of its controlling committee; but for the remainder it finds plenty of work. It has closed, it is true, all its extemporized hospitals, and the working arrangement between itself and the Hertford Hospital is at an end, but it maintains a dental clinic for the benefit of certain commissariat and like troops, as also a kind of an "infirmary first aid post" and buffet at the Gare du Nord. It also keeps going some working parties for the fabrication of garments for prisoners and for men still in the field, and does a good deal of agency and transport work in connexion with sick officers and nurses on their way to and from the convalescent homes on the Riviera, and with nurses, orderlies, and ambulance drivers who are passing through Paris on duty.

The Franco-American ambulance outside the Neuilly Gate continues to occupy a leading place among institutions of its kind. The French military authorities make ample use of its resources, and after some sixteen months of work there is no sign of slackening in the matter of energy and enterprise. The arrangements have been perfected in various ways, but the general system on which it is conducted remains much the same as it was before. It is under the general control of an American surgeon habitually resident in France, and is staffed by successive teams of surgeons supplied by different medical centres in the United States. There is thus never any lack of new ideas, but splints contrived out of plaster-of-Paris are not now in favour. Considering that the United States are almost the home of gypsum, and that men trained in American schools are particularly skilled in its use, its displacement at this hospital is rather striking testimony to the new ideas in the treatment of the wounds, usually septic, seen in this war.

Of the general keenness of the staff there was evidence last week. It was learnt that Mr. Robert Jones of Liverpool was in Paris for a few hours, so the staff promptly got together some 20 or 30 cases of gunshot wound of the upper limb, and induced him to use them as the basis of an impromptu clinical lecture or demonstration.

Among the points on which the visitor laid stress was the importance, in cases in which ankylosis of the shoulder-joint is to be anticipated, of keeping the upper arm during treatment in such a position that the face and top of the head can easily be reached by the hand. The advantage was that if ankylosis occurred with the humerus in this position, full utility of the upper limb was nevertheless practically conserved, since tilting of the shoulder blade would enable the patient to effect most of the other movements of the hand required in daily life.

A second point was the desirability of treating all fractures of the forearm with the radius in a position of complete supination instead of halfway between that position and full pronation. Experience, he said, showed that adoption of the latter or classical position often resulted in serious loss of function, for though the hand could easily be pronated it could not be fully supinated. If, contrariwise, a case were treated with the radius completely supinated from the beginning, the worst that could happen was loss of natural pronation power, and this as compared with loss of supination power was a relatively small evil, since sufficient pronation could be secured by movement at the shoulder.

A third point on which Mr. Robert Jones dwelt related to gunshot wound involving the wrist. In these, he said, the joint should be kept not in a position midway between flexion and extension (that is, with the hand in the same line as the forearm), but in one of hyperextension, or, so to speak, dorsal flexion, for should a stiff wrist result from the injury, the grasp of the fingers would be much stronger if the carpus were pushed backwards than if the wrist were straight or the hand bent towards the flexor surface of the forearm. The same position, it was remarked, also afforded a much better chance of securing a return of power in cases of wrist-drop due to lesions of the musculo-spiral nerve. But in such cases not merely the carpus but the whole palmar surfaces of the fingers should be supported, the length of the digital portion of the splint being lessened as soon as the patient regained any power of extending his terminal phalanges by voluntary effort.

Additional interest was lent to this demonstration by the fact that it was delivered by Mr. Robert Jones on his way home from a prolonged expedition in the war zone. It appeared that he had received from the War Office an invitation to visit France for the purpose of examining for himself the difficulties encountered in dealing with the treatment and evacuation of cases of gunshot wound of the upper and lower limbs, and that he and his companion, Mr. Lynn Thomas of Cardiff, had been allowed to visit any hospital they wished not only at the bases but also in the fighting areas.

Incidentally, too, they had examined the working of a large number of medical annexes such as ambulance trains, hospital ships, convalescent camps, and bathing establishments. They seemed to have been very favourably impressed by the general character of the work done and the completeness of the arrangements made, and had discovered nothing to support a belief that there was lack of economy and judgement in respect of the number and distribution of medical men employed in the work.

Another institution rather in the foreground just now is a clinic whose work occupies a large number of rooms on the upper floor of the Grand Palais in the Champs Elysée. The patients are all soldiers suffering from loss or impairment of function in the upper or lower extremities resulting from wounds or other injuries received in the present war. The peculiarity of this institution is that all the means of treatment employed are of a mechanical and electro-therapeutic order. Probably none of them are unfamiliar to those cognisant with the more or less recent developments in these particular branches of medicine, but never before have their therapeutic powers, whatever these may be, been aggregated on quite the same lines.

There are some four or five different departments, each in charge of an expert, and all as a rule take part in the treatment of a given individual. Treatment, for instance, commonly commences by a patient having a stiffened joint exposed to blue light treatment till sufficient degree of analgesia is produced to allow of its being handled freely. He may be next sent to a room where an electrically-driven machine moves the joint in certain given directions, though more commonly the machine is one moved by the patient himself.

This part of the treatment finished for the day the patient is probably passed on to the officer in charge of one or other of three other departments, in all of which the aim is to improve the tone of the tissues around the affected joints and of the connected muscles. In one, treatment by radiant heat is employed, in another the stimulating effect of local baths of vibrating water and

faradic and other currents; in a third ordinary massage. There is also a department in which cases of particular interest are recorded by means of photographs, casts, and water-colour work; and yet another in which a very precise card index record is kept of the condition of each patient on coming under treatment, and on its completion. These records include an estimate of the functional inefficiency persisting, and will be used, it is understood, in determining the pension or allowance to be allotted to the individual.

There is a logical completeness about the arrangements of this institution which is certainly attractive, as well as characteristically French, but whether the results by the machinery mentioned could not be secured quite as well and more rapidly by simpler means is another question. The apparatus is for the most part of Swedish origin and remarkably ingenious in many cases. The movement to which the joints are submitted can be precisely regulated, and, as a rule, is partly active, partly passive. It is passive, inasmuch as the movement once voluntarily commenced by the patient, will be completed, if necessary, in the reverse direction by the action of an attached weight, which also regulates the force that the patient must exert.

Another institution well worth visiting at the present time is the new Hôpital Cochin, which for a long time has been growing up alongside Val de Grâce. Built for the most part in separate single-story pavilions, it represents to a large extent the latest French ideas of hospital construction, and, when all its special departments are complete, will be one of the most striking hospitals in Europe. Its annexes include a large theatre for teaching purposes, and a very notable *x*-ray and electro-therapeutic outfit. The latter is disposed in a series of rooms, each devoted to a different class of work, and colour photography, of which some very remarkable specimens are to be seen, is largely used for recording cases of exceptional interest.

PHYSICAL TREATMENT FOR DISABLED SOLDIERS.

Organization in Paris.

We have received from Drs. R. Fortescue Fox and J. Campbell McClure, honorary secretaries of a committee of the Section of Balneology and Climatology of the Royal Society of Medicine, a report furnished to them by the courtesy of the French Government and of Dr. Jean Camus and his colleagues, on the work carried out in the Grand Palais and associated hospitals down to the end of 1915. The combined treatment, which has now been carried on some twelve months, includes:

1. Local applications of heat and moisture in strong currents of water ("The Whirlpool Bath") at temperatures rising to 120° and over.
2. Dry heat and local hot-air baths.
3. Light and other radiation baths.
4. Electrotherapeutics.
5. Manipulation and massage.
6. Mechanical treatment by a modified form of Zander apparatus.
7. "Re-education" of muscles and muscular groups by exercise and training.

Careful measurements are taken and graphic records preserved. The objects of the treatment are—

1. To hasten the return of wounded to their units at the front.
2. To reduce expense to the State by reducing disability entailed by wounds.
3. To reduce impairment of civil industry after the war occasioned by the numbers of seriously and permanently crippled men.

It is reported that half the patients treated return to their units and in a shorter time than is possible by other methods of treatment.

In addition to the large institution in the Grand Palais, there are in and near Paris seven other centres for combined physical treatment, and seven complete and four incomplete installations of the same kind in the French provinces.

Drs. Fox and McClure conclude their report as follows:

1. That it is by a novel association and combination of physical methods that our French colleagues have obtained such good results, and that the hyperthermal "whirlpool bath," hitherto not used in England, forms an effective preparation for massage and mobilization, whether by hand or apparatus.
2. That such physical treatments are most successful when no time is lost in submitting the injured limb to them. Unfortunately that is not the case in England, nor yet in France. Regret is often expressed at the British health resorts that the wounded arrive so long after their injuries that the chance of cure or even amelioration is not infrequently lost.
3. That the number of disabled officers and men who would benefit by an approved physical treatment is now so very large—indeed that the need is so great and so pressing—that the facilities afforded by the health resorts cannot be regarded as sufficient to meet the emergency. In France, which is full of health resorts, it has been found necessary, as above mentioned, to set up eight centres for physical treatment in Paris, besides many in the provinces. We are aware that provision is being made for similar treatment at the British Command Dépôts, but the number of disabled men in the metropolitan area alone appears to us to warrant the establishment at the earliest possible moment of a central institute for physical treatment in London.

Model Hydrotherapeutic Installation.

Dr. Fortescue Fox has devised a model hydrotherapeutic installation for soldiers within the compass of a single hut (60 by 20 ft.), and the plans have been worked out by Mr. Harley M. Usill. The boiler which serves the baths and warms the building is in an annexe, and there is another annexe for linen and w.c.'s. The building is divided into two parts, the one for the baths and the other for the treatment of disabled limbs. The douche room is fitted with a series of shower baths, a nozzle douche to give varying pressure and temperatures, and a needle bath. In an adjoining room are three tubs for brine and effervescing baths. Beyond this, in the centre of the building, in a separate room, is a special feature of the installation—a pool bath, the temperature of which can be kept at about 60° F. day and night. It is designed for sedative treatments. The patient is seated in flowing water maintained at an even temperature by means of a calorifier fitted with a thermostatic valve. The sedative effect is proportional to the duration, which may extend to several hours. These prolonged "subthermal" baths are said to be specially indicated in cases of mental disturbance with depression and irritability, and are also used for insomnia and restlessness, and for shock, peripheral neuritis, and neuralgia. The pool is 8 ft. square, and ten men can be comfortably seated in it. The department for the treatment of disabled limb consists of two rooms, one with whirl baths and hot-air and radiation baths, and the other with tables for massage and manipulation, and with simple apparatus for mobilization of joints. Altogether sixteen cubicles are provided for rest and changing of clothes.

Shower baths, beginning at 95° to 100°, and finishing cold after two minutes, are used as tonic baths, as are also the nozzle douches, the stimulant effect of which can be heightened by increasing the pressure of the water. The douche should begin warm and finish after one, or at most two, minutes, as cold as can be comfortably borne. In atonic subjects two jets, one at 95° and the other cold, may be used simultaneously. The alternating douche is indicated for chronic neuralgias, for atonic and spinal neurasthenia, for mental depression and malingering. Tub baths are commonly given at 98° F. for ten to fifteen minutes; brine and carbonated effervescent baths can also be given. Very brief hyperthermal baths, 105° to 115°, are useful in cases of sluggish circulation, fatigue fever, and muscular rheumatism. The first effect is to stimulate the heart and dilate the superficial arterioles; they must not be prolonged beyond two, or at most three, minutes, otherwise the first stimulant effect is followed by debility. Like other hot baths, they should be ended by a momentary affusion with cold water. In the local treatment for disabled limbs, heat, moisture, manipulation, and movement are all used as at the Grand Palais. The whirl baths for the arm and leg are given at 110° to 115° F., or 120° F., or even higher. Their duration is from fifteen to thirty minutes. They increase the arterial and lymph circulation in the injured part and promote the absorption of effusions; they also relieve pain and muscular spasm. They may be used in every case as a preparation for massage and movements, which are thereby rendered easier and less painful. Cases should be recorded on a card prepared by the Section of Balneology and Climatology

and approved by the Medical Research Committee, so that the results may be collected in a uniform way for the use of the Committee on the Medical History of the War. Copies of the cards can be obtained from Messrs. Adlard and Son, 76, Newgate Street, E.C.

JAUNDICE AT ALEXANDRIA.

AT a meeting held at Alexandria on November 7th, 1915, a discussion was held on cases of jaundice in the military hospitals there.

Sir RONALD ROSS, who was in the chair, said that the main points at issue were, first, that a large number of the cases were probably only secondary or symptomatic, and occurred in the course of such diseases as dysentery and typhoid; and, secondly, that many cases appeared to be due to a specific disease. There were two types of specific jaundice known to occur in Egypt, one a mild type—icterus levis—with practically no mortality; the other, a very severe type—icterus gravis—with a mortality of 30 per cent. or more.

Professor KARTULIS divided the local varieties of jaundice into three principal groups: (1) Infectious jaundice due to direct infection by the mouth; (2) infectious jaundice with intermediate unknown causation; (3) infectious malignant jaundice of the Mediterranean with unknown causation. The two first groups were also described under the name of "Weil's disease." The first was caused by spoiled or foul food or by drinking stagnant water contaminated by sewage. It occurred among butchers, or among soldiers living under bad hygienic conditions or bathing in dirty water, and was not epidemic. The second group was sometimes epidemic among persons dwelling in unhealthy localities with defective drainage. The incubation period and duration were short in both groups, and a fatal issue seldom occurred even when the initial symptoms were alarming and intense. The onset was sudden, with rigors, fever, severe headache, and pain in the back and joints, followed by prostration, anorexia, thirst, and diarrhoea without colic. During the first three to five days the patient felt weak and could not sleep. On the fifth day, or later, the jaundice appeared. The urine contained albumin from the onset, was diminished in quantity, and of a dark greenish colour. The liver and spleen were enlarged and tender. From the fifth to the eighth day the symptoms improved and the jaundice faded. A febrile relapse with relatively slight symptoms frequently occurred during the fifth or sixth day. Convalescence, which began after ten to fourteen days, was protracted. During the first stage the tongue was coated and the pharynx congested. Vomiting was very common; labial herpes and persistent hiccough were seen in some cases, and epistaxis and petechiae were not uncommon. In addition to albumin, casts and sometimes blood appeared in the urine, and anuria with uraemic symptoms were present in many cases. Intense headache and severe pains in the muscles, especially in the calves, giddiness, stupor and delirium were common symptoms in nearly half of the cases. The pulse, at first 120 to 150, became normal with the appearance of jaundice. *Post mortem* the liver was seen to have undergone fatty degeneration, some lobules being destroyed, and this was the chief lesion in the kidneys also. The splenic follicles were enlarged and the leucocytes in the pulp augmented. In the third group were included yellow fever, bilious relapsing fever, the Smyrna typhus biliosus, the Nauplia typhus icterodes, and the Alexandria infectious jaundice or bilious typhoid. He dealt only with the infectious jaundice of Alexandria, Smyrna, and Nauplia. There was no doubt as to the identity of the disease in these three towns; in no other port of the Mediterranean did it occur in endemic or epidemic form. He sketched the distribution of the disease in the various outbreaks at Alexandria, which showed that its pathogenic agents must have some intimate relation to sewers and sea-water. It attacked persons of from 16 to 45 years old, but he had only seen 4 cases among women out of more than 300 cases. Most cases occurred during May and June or from September to November. During the last ten years, since the drainage had been conducted out to Chatby, the disease had become rare in Alexandria. Before 1898 probably 100 cases ended fatally each year. In 1898 there were 34 cases with 25 deaths, and in 1901 47 cases with 32 deaths. Afterwards the numbers gradually diminished to 1907, when there were 23 cases with 7 deaths. In 1908 there was a drop in the number of patients to 5, of whom 2 died. It had remained comparatively low since, only 3 cases occurring in 1915, of which 2 were fatal. In Nauplia and Smyrna the disease disappeared after the construction of a better drainage system. After an incubation period of one to three days, the disease commenced with rigor, severe headache, lumbar pain, prostration, increase of pulse-rate to 100 to 120, restlessness, and vomiting. During the next two or three days the conjunctivae became injected, and the patient looked as if drunk and was very restless. The tongue was foul, but red at the point and edges. The pharynx was much inflamed, and swallowing was difficult and painful. The epigastrium and hepatic region were tender. Epistaxis and herpes were common. Other early symptoms were constipation, diminution in the amount of urine, albuminuria, and intense thirst. These symptoms continued from three to six days, and on the fourth or fifth day the second stage set in with jaundice. If the disease took an unfavourable course, the myocardium became affected, the pulse becoming slow and perhaps intermittent. The liver was enlarged and very tender. The spleen enlarged only occasionally, and was rarely tender. Epistaxis, haematuria, and petechiae were often met with. Oliguria and anuria occurred, or the urine might contain, besides albumin and bile pigments, epithelial and blood casts. Hiccough was of bad omen. Parotitis was very common. At the end of this stage the fever lessened, but rose again after two or three days. If the fever became continuous and anuria persisted, the patient became apathetic and his respirations frequent and intermittent, the tongue dry and red, the pulse small and rapid or intermittent, and unconsciousness or delirium supervened. This was the third or typhoid stage. Sometimes anuria was replaced by polyuria. The stools became white and offensive, the jaundice remaining intense. Xanthopsia might be present. The weakness became extreme. Death occurred between the tenth and sixteenth day, and was due to uraemia, haemorrhage, pyaemia after suppurative parotitis, or general weakness. Convalescence was very protracted. The agent of the disease was probably ultramicroscopic, since repeated researches had failed to reveal it. The mortality was from 30 to 75 per cent. *Post mortem* jaundice and haemorrhages were found in an intense degree. There was no essential or constant lesion. The liver was nearly always large and congested. In the early stages its vessels were full of cherry-red coloured blood and its surface was marbled, but afterwards became yellow owing to fatty degeneration. The pancreas was usually large, hard, and yellow.

Captain N. BOULTON, R.A.M.C., said that among cases of jaundice recently under treatment a history of previous jaundice was obtainable in 10 per cent. He had been able in one case to determine the incubation period. A patient developed an attack within a week after exposure to infection. In nearly every case jaundice appeared in from three to five days from the onset. Nausea, anorexia, malaise, and mental depression were present in over 90 per cent. of the cases. Abdominal discomfort occurred after the slightest indiscretion in diet. Headache was present in 60 per cent. Vomiting and abdominal pain were noted in about 30 per cent. Diarrhoea occurred, but was not marked. Pruritus was rare. The temperature ranged from 99° to 103.5° F., and was usually between 99° and 100° F. The pulse was usually slow. The appearance of jaundice heralded a definite amelioration of the symptoms in over 90 per cent., but relapses were occasionally met with. The liver and gall bladder area were tender in nearly every case, but the liver was not definitely palpable. The gall bladder was felt in nearly 10 per cent. No death had occurred. The course varied from three to six weeks. Rest in the horizontal position was the most important factor in treatment. Urotropine and sodium phosphate were employed without definite results. The disease, except in its epidemic character and probable infectivity, differed clinically in no wise from ordinary so-called catarrhal jaundice.

Lieutenant GUNSON, R.A.M.C., had found that the tongue was moist and quite clean in all cases. The liver was invariably enlarged and tender, sometimes extending for 3½ in. below the costal margin. The spleen was also

greatly enlarged and tender. The heart was so definitely and persistently enlarged in many cases that it provided the leading feature of the clinical picture. The cardiac impulse was frequently palpable to the right of the sternum, and the cardiac enlargement was confined to its right side. The heart sounds remained clear, and there was no evidence of tricuspid regurgitation. The pulse was of good strength, but slow during the jaundice. Sinus arrhythmia was constant. General weakness persisted, and the patients, after having been out of bed for two or three weeks, could not perform gentle exercises without experiencing dyspnoea and giddiness, accompanied by increase of the pulse-rate. Usually some enlargement of the heart persisted, and was not reduced by rest. There were no fatal cases. All were treated by absolute rest in bed for several days. Drug treatment had no apparent influence.

Captain KERR, R.A.M.C.T., had come to the conclusion that it was not possible to dissociate the intestinal disorders, which had been prevalent, from the jaundice, and could not see in the latter a distinct disease. In the great majority of the cases under discussion there was a distinct history of diarrhoea or dysenteric symptoms, recent or remote. He did not think that the condition was that usually called epidemic jaundice.

Colonel TUBBY said that there appeared to be two prevailing types of jaundice: (1) Jaundice occurring in the course of some infection of the intestinal tract, as in dysentery and enteric fever. (2) Jaundice *per se* occurring in a definite epidemic form. In a large percentage of cases of the second class there was a history of a sore mouth and tender gums, followed by jaundice, feverishness, and heart weakness. He was inclined to think that the infection started in the mouth and gums, passing later to the intestine and bile ducts.

Captain ALLEN, R.A.M.C.(T.), said that of 30 cases of jaundice 22 had had either dysentery or diarrhoea previously. Eleven cases developed jaundice after admission and 6 of these were in beds near to patients suffering from that condition. In 2 cases only was the gall bladder felt, but its area was tender in the greater number. Dilatation of the heart and enlargement of the spleen were not detected. Four cases, admitted for purely surgical conditions, developed jaundice 8, 10, 14, and 19 days respectively after admission. They were all very ill, their temperatures varying from 100° to 103° F.

Major A. R. FERGUSON, R.A.M.C., regarded the jaundice met with as falling into two classes: (1) A mild form, (2) an extremely toxic form identical with that described by Professor Kartulis. Outbreaks of jaundice occurred among men camped on ground which had been occupied by horses in large numbers. He was of opinion that certain bacteria present in the faeces of such cases had a pathogenic significance. In two cases he had isolated *B. proteus fluorescens* in considerable numbers. Captain Mackie had recently isolated the same organism, as had also Jaeger and Banti some years ago. Like Colonel Tubby, he had observed herpetic or small septic lesions about the lips and gums and he thought that the initial congestion of the pharynx was also of special significance. In recent outbreaks in Egypt the severe toxic forms had not been met with. *Post mortem* both chambers of the right side of the heart were very dilated and flaccid. The liver suggested in some respects that of acute yellow atrophy.

From subsequent discussion, in which Sir RONALD ROSS, Lieutenant GUNSON, and Professor KARTULIS took part, it appeared that the cases from Chatby differed from those from Gallipoli; the former alone showed dilatation of the right side of the heart, were more protracted, and were accompanied by greater nervous depression and more enlargement of the spleen and liver.

CASUALTIES IN THE MEDICAL SERVICES.

ARMY.

THE deaths noted below include those of two officers, Major W. B. Fry, who died nearly a year ago as a prisoner, and Lieutenant J. G. Bute, whose death is presumed.

Lieutenant John Gillis Bute, R.A.M.C., is believed to have been killed in France on October 29th, 1914. He was born in India, the son of Colonel Edward Bute, Army Medical Staff, and was educated at Trinity College, Dublin, where he was a prominent member of the University Dramatic Society. After graduating M.B. and Ch.B., he entered the R.A.M.C. as lieutenant on July 31st, 1914. He was attached to the Grenadier Guards from September 7th, 1914, and was with them up to October 29th. On that date he was last seen alive attending Colonel Earle, of the Grenadiers, who had been wounded. As the enemy advanced, Colonel Earle was again wounded as he lay on the ground, and Bute is supposed to have been killed at the same time. Colonel Earle lost consciousness, and was unable to say with certainty that Bute was killed, but he appears never to have been heard of since that day. Had he been alive, and a prisoner of war, he would almost certainly have been able to communicate the fact to his relatives. His name, as far as we have noticed, has never appeared in the list of casualties, and for many months was retained in the *Army List*, being included in the list of lieutenants promoted to captains on March 1st, 1915.

Died on Service.

Major Walter Burgess Fry, R.A.M.C., is reported to have died of typhus fever as a prisoner of war at Wittenburg, in Saxony, on March 17th, 1915. He was educated at St. Thomas's Hospital and took the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1900. He entered the R.A.M.C. soon after and attained the rank of major on December 21st, 1911. He was taken prisoner in the retreat from Mons. Six months later an epidemic of typhus fever occurred among British soldiers who were prisoners of war at Wittenburg, and several officers of the R.A.M.C., who were also detained as prisoners, volunteered to attend the sufferers. Captains A. A. Sutcliff and S. Field, R.A.M.C., also died there of typhus fever contracted from their patients, on March 12th and April 10th respectively, as stated in the JOURNAL at the time. Major Fry had given particular attention to the study of trypanosomes and tropical affections. In 1910 he contributed, with Mr. H. G. Plimmer, to the *Proceedings* of the Royal Society of London a paper on the experimental treatment of trypanosomiasis, and in 1911 a paper on the same subject to the *Journal of the R.A.M.C.* In that year he became protozoologist and assistant bacteriologist to the Wellcome Tropical Research Laboratories at Khartoum. His first contribution to the reports of those laboratories (1911) was on animal trypanosomiasis in the Anglo-Egyptian Sudan. In 1913 he published, with Captain H. S. Ranken, V.C., who died in France on September 25th, 1914, from wounds received a few days before, the result of further researches on the extrusion of granules by trypanosomes and their further development. It was published, with a note on methods by H. G. Plimmer, in the *Proceedings* of the Royal Society (June 12th, 1913). The last paper by Major Fry of which we find record is one on antimony in the treatment of syphilis, published in the *Journal of the R.A.M.C.* for 1914.

Died of Wounds.

Captain Alister Ralph Spiers-Alexander, I.M.S., died of wounds in Mesopotamia on February 9th. He was the son of Dr. Spiers-Alexander of Hampstead, and was educated at University College, London, taking the M.B. and B.S.Lond. in 1910. He entered the I.M.S. as lieutenant on January 28th, 1911, and became captain on January 28th, 1914. His name appeared among the wounded in the casualty list published on February 14th; he was then attached to the second battalion of the 7th Gurkhas.

Lieutenant-Colonel John Wilfred Stokes, R.A.M.C.(T.F.), died suddenly in a military hospital at Lachmere, Ham, on February 10th, aged 43. He was the eldest son of the late Rev. Arthur Stokes, of Mussoorie, India, was educated at University College, London, and took the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1895. After qualifying he filled the posts of house-surgeon to the children's hospital at Wicker, Sheffield, and house-physician to the Sheffield Royal Infirmary, subsequently becoming anaesthetist to that hospital, and demonstrator of anatomy in Sheffield University. When the war began he became Lieutenant-Colonel in command of the 3rd West Riding Field Ambulance from August 31st, 1914, and in that capacity went to France in April, 1915, but had twice been invalided home suffering from shell shock, and had been under treatment at Ham since December.

Wounded.

Major W. H. Odlum, I.M.S., Mesopotamia.

Lieutenant (temporary) F. M. Vazifdar, I.M.S., Mesopotamia.

DEATHS AMONG SONS OF MEDICAL MEN.

Evans, David Owen, Lieutenant 17th Battalion Royal Welsh Fusiliers, son of Dr. D. D. Evans of Blaenau Festiniog, killed in France on February 14th. He was in a bank at Winnipeg when the war began, came over with the first Canadian contingent, and later got a commission in the R.W.F. Three of his brothers also came to England in the Canadian contingents and are in the Indian force.

Freebairn, Buchanan William, Private 1st Newfoundland Regiment, C Company, eldest son of Dr. Robert Jardine Freebairn, stipendiary magistrate for the district of Ferryland, Newfoundland, died at Malta on October 23rd, 1915, of dysentery, contracted in the Dardanelles, aged 22.

Griffith, Richard Evelyn, eldest son of the late Dr. Herbert Tyrrell Griffith, M.D., of 5, Kensington Square, and formerly of the I.M.S., killed at Anzac, Gallipoli, on August 8th, 1915, aged 27.

Habershon, Kenneth Rees, Lieutenant 12th Battalion Rifle Brigade, second son of the late Dr. S. H. Habershon, killed in France on February 13th, aged 26. He got his first commission on September 19th, 1914.

Waite, J. Thorpe, Lieutenant 5th (Weald of Kent) Battalion the Buffs, or East Kent Regiment, eldest son of the late Dr. Waite, of Halifax, Yorkshire, killed in Mesopotamia on January 21st. His commission as lieutenant was dated August 22nd, 1914.

NOTES.

HONOURS.

CAPTAIN ERIC D. GAIRDNER, M.B., R.A.M.C.(T.F.), the son of the late Sir William Gairdner, has been awarded the French Military Cross for services in Gallipoli; he is attached to the Royal Scots Fusiliers, 5th Battalion (T.F.).

THE SWEDISH WAR HOSPITAL IN LONDON.

The proposal to establish a Swedish war hospital in London for wounded and disabled soldiers was only conceived two months ago. It received influential support not only from Swedes in London but also from Swedes at home, and lately also from many English friends of Sweden, and it has been found possible to establish a fully equipped hospital for thirty in-patients and a number of out-patients at 16–18, Paddington Street, London, W., where suitable premises have been acquired, reconstructed, and approved by the War Office. The hospital has been equipped with an operating theatre and an *x*-ray installation, and in adjoining premises, arranged to form part of the main building, accommodation for the staff has been found.

The General Committee, of which Count Herman Wrangel, the Swedish Minister, is Honorary Chairman, has obtained the services of a medical staff, including as honorary consulting surgeons Mr. F. Swinford Edwards and Mr. G. B. Mower White, and as honorary consulting physicians Dr. A. J. Jex-Blake and Dr. J. F. Jennings, in addition to Mr. H. B. Grimsdale (ophthalmologist), Mr. Harold S. Barwell (aurist), and Mr. Harry Forsyth (dental surgeon). Regular attendance will be given by Drs. Cyriax, Ryman, Swanberg, and Widegren, and Dr. K. Westman will be the resident medical officer.

The hospital is managed by a general committee, of which Messrs. H. Bendixson, C. Svedberg, and Axel Welin are the trustees, Mr. Allan Broman the honorary superintendent, and Major E. Mossberg and Mr. Louis Zettersten the honorary secretaries.

The hospital was formally handed over to the War Office on February 21st by Count Wrangel, who expressed the hope that it would be taken by English friends as a token of international solidarity. In receiving the gift on behalf of the War Office, Surgeon-General Russell pointed out how its work would tend to unite the two nations: and the Bishop of Willesden, who offered up dedicatory prayers, noted the fact that the day was the tenth anniversary of Count Wrangel's appointment as Swedish Minister at St. James's.

MEDICAL OFFICERS WANTED.

3/2nd Home Counties Field Ambulance.

Three medical officers are required in this unit. Applications to the Commanding Officer, Halton Camp West, Tring, Herts.

1st South Midland Mounted Brigade.

Three medical officers are wanted for imperial service to complete the 2nd line (T.). Applications to Major D. M. Spring, S.M.O., R.A.M.C.(T.), Head Quarters, Hempton, Fakenham, Norfolk.

England and Wales.

THE CARDIFF HOSPITAL AND WELSH MEDICAL SCHOOL.

LAST week the new wing of the King Edward VII Hospital, Cardiff, providing 150 beds, was formally declared open, and named the "Bruce Vaughan" wing. On the same occasion Colonel Bruce Vaughan, to whom the hospital and the Welsh medical school owe so great a debt, was presented with his bust in bronze, the work of Sir William Goscombe John, R.A. A portrait of King Edward VII was also unveiled in the entrance hall, and Lord Aberdare, who performed the ceremonies, observed that the new wing had been, in fact, in use for some time. General H. H. Lee, in opening the meeting, said that the hospital was greatly indebted to its treasurer, Lord Aberdare; the fact that he held that office had been a great assistance in obtaining the £46,000 which the erection of the wing had cost. The new wing contained pavilion wards for 110 beds, and, in addition, provided isolation beds. The Lady Aberdare operating theatre, which had cost £3 000, was one of the finest in the kingdom. Colonel Bruce Vaughan announced that Mrs. Nixon had doubled her contribution, raising it to £10,000. Of the additional £5,000, £3,000 was to be used to pay for the cost of the hospital chapel, and £2,000 to be placed in trust for a research scholarship in medical pathology. He then went on to speak of the delay which the action of the Board of Education and the Treasury had put in the way of the realization of the scheme for the completion of the Welsh national school of medicine. Sir Donald MacAlister in 1909, and Sir William Osler a little later, had said that Cardiff possessed all the material for a first-class full-time school, and by the munificence of Sir William James Thomas the money for the necessary buildings had been provided more than two years ago. Colonel Bruce Vaughan did not accept the contention that before the medical school was provided the proposed reconstruction of the University of Wales must be carried out. The hospital had been enlarged and equipped for teaching purposes, and apart from the need for the training of medical students there were four reasons why the school in the interests of Wales should be set up: (1) In the interests of the patients of the hospital, for wherever a complete school was established medical and surgical science stood higher than it did where there was no school, and the patients reaped the benefit, not only because there was extra attention, but also because it established discipline in the hospital, and therefore added considerably to its efficiency—no mean advantage in a hospital which would shortly have 480 beds. (2) It would promote research in pathology and therapeutics, for research in those subjects, if undertaken at all, must be undertaken jointly by a great hospital and a medical school. (3) It would form a centre for the diffusion of medical knowledge in the surrounding districts. (4) It would be an institution for consultative purposes to which practitioners seeking advice or knowledge might apply. The unwisdom of the delay enforced by the Government was heightened by the fact that Sir William James Thomas had promised to maintain the school buildings until such time as the Treasury saw its way to make the grant. The plea of "war economy" would not stand, for, as had recently been said, whatever else was economized in this war the grants to science and research should be increased. In an editorial comment on the meeting the *Western Mail* says that "the promoters of the Welsh School of Medicine are as determined as ever to proceed with their project. Their enthusiasm," it adds, "in fact seems to have been increased rather than diminished by the discouragements and delays with which they have had to contend."

FUNCTIONS OF THE PITUITARY BODY.

At the last meeting of the Liverpool Medical Institution Dr. Blair Bell gave an account, illustrated by lantern slides, of his researches on the function of the pituitary body. The experiments were made on dogs, under rigid aseptic conditions. Excess of pituitary secretion resulted in acromegaly, deficiency in dystrophia adiposogenitalis. Complete ablation of the pars anterior caused death. Total removal of the pars posterior produced no symptoms. Separation or clamping of the stalk interfering

with the vascular supply of the pituitary body produced dystrophia adiposo-genitalis, carbohydrate tolerance, and genital atrophy, and he had been able to confirm his conclusions by control experiments and *post-mortem* observations. Infundibulin, the pressor agent, originated in the pars intermedia, and apparently passed into the pars nervosa. Dr. Blair Bell alluded not only to the pathological conditions due to lesions of the pituitary body, but touched on the therapeutic action of its extract.

LIVERPOOL HOSPITALS.

The report presented to the annual meeting of the Royal Southern Hospital, Liverpool, on February 15th, with the Lord Mayor in the chair, stated that during 1915 the in patient department had 220 beds at its disposal; the average number of beds occupied was 180.85 and average number of days each patient was resident 26.57. The average cost per bed was £77 0s. 3½d. in 1915, as against £75 3s. 10d. in 1914. The average cost of each in-patient per week was £1 9s. 7½d. in 1915, as against £1 8s. 11d. in 1914. The total number of in-patients in 1915 was 2,688, a decrease of 178 as compared with 1914, entirely due to the longer stay of the patients under treatment. The military authorities had at their disposal 50 beds for sick and wounded soldiers; not all these beds had been so used, and the committee secured the consent of the military to make use temporarily of 20 beds for the civil patients. The out-patients in 1915 comprised 15,937 new cases, with 60,380 attendances. The average cost per attendance was 5.65d. The increased expenditure in this department, £1,421 5s. 3d., as compared with £1,323 7s. 8d. in 1914, was due to the larger number of patients treated and the additional cost of drugs, dressings, and instruments caused by the war. The Out-patient Maintenance Fund Committee reported that many members of approved societies under the Insurance Act were treated each year, and it expressed the hope that generous grants by these societies would be made towards the upkeep of the out-patient department. The special departments were those which are visited more frequently year by year by insured persons.

The annual meeting of the Royal Infirmary was held on February 17th, under the presidency of the Marquis of Salisbury. It was reported that the number of in-patients during 1915 was 4,328, against 4,898 in 1914. The out-patients numbered 26,078, against 25,316 in 1914. The cost of maintenance had increased from £21,136 in 1914 to £23,273 in the past year, and the debit balance was now £8,022. Dr. T. B. Grimsdale had tendered his resignation of the post of honorary gynaecological surgeon at the Royal Infirmary, which he had held for eighteen years, and the committee, in expressing high appreciation of his services and as a mark of esteem, recommended his election as honorary consulting gynaecological surgeon. Dr. Blair Bell, who was previously assistant gynaecological surgeon, was unanimously elected in his place.

In both these hospitals medical women have been appointed resident medical officers, and senior students have also acted. In neither hospital is there a medical man holding a post who is eligible to join the Army Medical Service.

Ireland.

DUBLIN CASTLE RED CROSS HOSPITAL.

A PUBLIC meeting, convened by the City of Dublin Branch of the British Red Cross Society, in support of the Dublin Castle Red Cross Hospital, was held last week at the Mansion House. The Lord Mayor presided over a large and representative gathering.

Mr. W. M. Murphy said the object of the meeting was to present to the members and supporters of the City of Dublin Branch of the British Red Cross Society a brief account of its inception, its aims, and a statement as to how those aims had so far been fulfilled. Shortly after the outbreak of war in August, 1914, a public meeting, convened by the Countess of Aberdeen, was held in the theatre of the Royal Dublin Society to consider what steps should be taken to promote Red Cross work in Ireland. A Red Cross bureau was established in Dublin and classes in home nursing and first aid were formed, the programmes issued by the Department of Agriculture and Technical Instruction adopted, and speedily a large number of students qualified themselves to join Voluntary Aid Detachments, working from a Dublin centre. It was then decided that a City of Dublin branch of the British Red Cross Society should be officially organized and affiliated to head quarters, and recognition given to the newly-formed Voluntary Aid Detachments. One hundred and forty Voluntary Aid Detachments had been accepted for special service. Of these, 57 were at work in hospitals at home or abroad, and about 100 were working in dépôts for the making of war dressings. The total number who had attended the classes in first aid and home nursing was 1,726. A clothing and benefits department, as well as a fruit and vegetable dépôt, had been opened. At a meeting held on November 29th, 1914, in the Mansion House, the citizens of Dublin and the Irish public generally were invited to provide funds for the establishment of the Dublin Castle Red Cross Hospital, the King having graciously given his consent to the project. A generous response was made, the structural alterations and equipment of the hospital were carried out without delay, and in two months the hospital with full equipment of operating theatre, *x*-ray room, etc., was ready for use. On February 17th, 1915, it received its first patients, 100 in number. Since that date 1,206 patients had been received and 1,077 discharged; there had been only six deaths. The hospital had the advantage of having from each of the ten hospitals in the city a surgeon and a physician who gave their services freely; there were two *x*-ray specialists also on the staff. The resident medical staff consisted of a medical superintendent and an assistant house-surgeon, with three resident medical students as dressers. There was an efficient staff of trained nurses under a matron, and willing help was given in many ways by members of the Voluntary Aid Detachments.

A resolution, proposed by the Archbishop of Dublin, affirming that the Dublin Branch of the British Red Cross Society was worthy of the support of the Irish public, more especially of the citizens of Dublin, was carried, as was a vote of thanks, proposed by Mr. Justice Barton, to the physicians and surgeons of the clinical hospitals of Dublin, who had given, and continued to give, their valuable services freely to the Castle hospital. The President of the Royal College of Surgeons, in acknowledging the vote of thanks, said that the character of the men who had been admitted to the Castle hospital was splendid—a brighter, more cheerful, or more grateful lot of patients he had never seen. The indomitable gaiety and hopefulness of the men was something extraordinary, and it seemed to be a quality common to all—to Canadians, Australians, and New Zealanders, representatives of all the great Dominions. The Managing Committee, he said, deserved credit for the uncomplaining way they had complied with the demands of the medical staff.

BOARDS OF GUARDIANS AND THEIR MEDICAL OFFICERS WHO HAVE JOINED THE R.A.M.C.

It is to be regretted that two Irish boards of guardians—one in the co. Fermanagh and another in co. Westmeath—have cancelled the appointments, made by them at previous board meetings, of locumtenents nominated by their medical officers when joining the Royal Army Medical Corps. On the whole, Irish boards of guardians since the outbreak of war have facilitated recruiting for the naval and military medical services, but in this, as in all other matters dealing with their medical officers, there is no uniformity of action. Some boards, in addition to appointing the locumtenent nominated by their medical officer on joining the Royal Army Medical Corps, pay half, and in a few instances the whole, of his small official salary, while others refuse to appoint either the locumtenent nominated by their medical officer or to pay any portion of his salary while he is in the service of the Royal Army Medical Corps. Such treatment by boards of guardians of Poor Law medical officers who have joined the Royal Army Medical Corps is a formidable obstacle to medical recruiting from the ranks of this Irish medical service. In ordinary times there is an ethical rule, very generally observed amongst the Poor Law medical officers in Ireland, that no doctor should apply to act as locumtenent for another while on holiday or sick leave without

the consent of the doctor going on leave. The strict observance of this rule at the present time would be of the greatest help to medical recruiting in Ireland, and in those cases where a certain number of doctors ignore it, notwithstanding the representations of the Local Government Board and Insurance Commission, other steps should be taken to make such doctors subordinate their individual interests to the greater national interests.

Medical Dialect and Folklore of the North of Ireland.

At a meeting of the Belfast Medical Students' Association held in the McMordie Hall, Students' Union of the university on February 18th, Sir John Byers gave an address on Medical Dialect and Folklore of the North of Ireland to a very large and appreciative audience. He dealt first with the practical importance to a medical man of knowing the strange words and phrases of the district in which he practised; he must know the language of his patients if he were to get a thorough insight into their troubles and woes. These words and phrases threw a light upon the history of a district, and it was a grave mistake to regard them as vulgar; they often represented archaic forms, and were survivals of words in the literature of centuries ago. Ulster possessed a dialect richer and more varied than any other area of the same size in the United Kingdom. This fact was due to the Celtic, Norman, Scottish, English, and French Huguenot immigration.

The lecturer then proceeded to give examples of dialect words and sayings descriptive of the various parts of the body and of the diseases which affect them, as well as of curious expressions employed by the sick; various charms and strange folk cures were touched upon; and, finally, the doctor himself, as described by the people in dialect terminology, was portrayed, and the foods used by the people, both in illness and in convalescence. An interesting discussion followed, and the meeting terminated by a hearty vote of thanks to the lecturer.

Scotland.

At the first meeting of the Central Midwives Board for Scotland, which took place on February 18th, Professor Sir Halliday Croom was elected chairman and Dr. Haig Ferguson deputy chairman. Matters concerning the arrangements for the future work of the Board were discussed, but no final decision was taken.

The Morison lectures before the Royal College of Physicians of Edinburgh will be delivered by Dr. Edwin Bramwell on Monday and Friday, March 6th and 10th, at 5 p.m. The subject is neurology of the war.

At the annual general meeting of the Glasgow Royal Asylum on February 17th Dr. L. R. Oswald, the physician-superintendent, reported that the number of admissions during the year was 93, as compared with 116 in the previous year. The decrease had occurred principally, if not entirely, among the men, and was to be explained by the number of men on service, by the financial prosperity enjoyed by those at home, and by a diminution of the causes producing mental disorder in the class from which the patients were drawn. The war coloured the symptoms produced in some cases, but was not the main causative factor in any. The absorbing interest of the national crisis, which had put self in the background, had thrown many who had previously no vocation in life into active social and philanthropic work, and had thus increased and not diminished the mental stability and general life. The saddest cases he had seen were those in which not the war itself, but the barbarous manner of its conduct by the enemy and the murder of innocent women and children had produced morbid depression closely allied to actual insanity. The directors reported that 534 patients had been treated in the institution during the year. The number of deaths was 37 and of discharges 65. Though the increased cost of maintenance amounted to at least 30 per cent., no change had as yet been made in the current rates of board.

Dr. Alexander Moriaev, of Craven Hill Gardens, Hyde Park, who recently died at the age of 79, left estate valued at £21,948.

Correspondence.

JEJUNAL FOR DUODENAL ULCERS.

Sir,—Sir John Bland-Sutton's explanation of the etiology of the so-called peptic jejunal ulcer (February 19th, p. 272) would not account for cases occurring within a short time of the performance of a gastro-enterostomy. A patient upon whom I did gastro-enterostomy had such an ulcer, which gave evidence of its presence six days after the operation, the diagnosis being verified both at the second operation undertaken for its relief, eight days after the operation, and at the subsequent *post-mortem* examination. It is inconceivable that structural alterations could take place in the jejunum in so short a time as six days, and some additional element must be at work in producing these ulcers.

The quotation from which the phrase a "vext duodenum and an agitated pylorus" is taken is to be found as a foot-note to the chapter on dyspepsia in the second volume of Tanner's *Practice of Medicine*. The whole passage will appeal, I think, to Sir John Bland-Sutton's sense of humour.—I am, etc.,

Bettws-y-coed, Feb. 22nd. Norman Porritt.

THE PHYSICS OF A SURGICAL DRESSING.

Sir,—The vehement replies to Lieutenant-Colonel Primrose are sadly narrow in their vision.

Dr. Samways's last sentence is, however, a relief. "A" is not always good nor "B" always bad.

Surely the whole matter is one of osmosis. If you apply a dense fluid like glycerine to the surface of a wound there must be a flow of lymph from the tissues. If, on the other hand, you apply an easily evaporating fluid you tend to dry up the exuding lymph and to seal the wound. If you completely cover a pad of wool soaked in glycerine (with or without carbolic acid) placed upon an open wound it will on removal weigh much more than when applied. My contention is that this osmotic action has prevented the penetration of germs into the tissues, and that the carbolic acid kills those that are on the surface.

Another simple fact is that by no substance in the world can you reach and destroy germs which have penetrated beneath the surface, without also destroying the surface tissues. If, however, you apply a substance which will kill those on the surface, and if you apply it before many have penetrated beneath it, the tissues themselves will dispose of the remainder, provided you allow free exit for the corpses of defenders and invaders alike. A substance which encourages exosmosis and is at the same time germicidal and anodyne appears to me to meet most requirements. Such you have in carbolic glycerine.—I am, etc.,

London, E.C., Feb. 18th. A. Ogier Ward.

THE INTRODUCTION OF CINCHONA TREES INTO INDIA.

Sir,—In Sir George Birdwood's letter on the introduction of cinchona trees into India Dr. T. Anderson's name is mentioned. Dr. Anderson introduced the cultivation of cinchona into the Bengal Presidency in 1861 from Java, taking also plants to the Nilghiris. He took charge of cinchona cultivation in Bengal at Darjeeling from the first steps, and his labours were completely successful. When he left India in 1869 he had overcome every difficulty in the cultivation of cinchona generally, and particularly as regards *C. Calisaya* and *C. succirubra*, the most valuable species. In a letter from the Acting Director of the Royal Botanic Gardens, Calcutta, dated February, 1871, to Sir William Grey, Lieutenant-Governor of Bengal, on the death of Dr. Anderson at the age of 38, it is stated, "No other person in India appears as yet to have succeeded in growing to economic advantage the invaluable species of *C. Calisaya*. Both *C. Calisaya* and *C. succirubra* now grow there better than in any other plantations in the world." I am informed on the best authority that *C. Calisaya* is not now and has never been a success in the Nilghiris; the climate does not seem to suit it. I am not aware that Sir Clements Markham took any part in the introduction or cultivation of cinchona in Bengal.—I am, etc.,

Horsmonden, Feb. 19th. F. T. Anderson.

THE EDUCATION OF NURSES.

SIR,—Dr. Mildred M. Burgess calls attention in your issue of February 19th, p. 292, to the subject of the education of nurses and to the desirability of granting a diploma in nursing on the basis of an independent examination. I beg to state that, under the powers of a Royal Charter, the Royal British Nurses' Association has, since the year 1907, held independent examinations—written, oral, and practical—and granted diplomas to successful candidates.

The subject acquires additional importance from the fact that efforts are at the present time being made to place the training and certification of nurses on an organized basis. The powers for effecting that purpose have already been secured and are in operation.—I am, etc.,

London, W., Feb. 21st. W. BEZLY THORNE, M.D.

THE ALLEGED WASTE OF ARMY MEDICAL OFFICERS.

THE following letter was published in the *Times* of Saturday, February 19th:

Sir,—I have recently had the opportunity of paying a prolonged visit to the British army in North France and Flanders in the company of a surgeon whose pioneer work in a particular department is as well known in the capital cities of our Central European foes as it is in the medical seats of learning of New York, Baltimore, Philadelphia, and Chicago. Before the outbreak of this Kultur-*versus*-democracy war I took an active part in the work of the St. John Ambulance Association and the British Red Cross Society, and had visited the head quarters of the Red Cross national organizations in Budapest, Vienna, and Berlin, whilst I enjoyed the great privilege of "doing my little bit" in the South African campaign; naturally, therefore, I was keenly interested to see how the Royal Army Medical Corps was performing its task of unforeseen and undreamt-of magnitude.

The primary object of the visit was to study a special point in the treatment of a particular class of injury in which one of us was interested, but fortunately we also had time and ample opportunity to investigate a question which is of quite a different character, which, from a national point of view, is more important and requires to be treated without bias, prejudice, or preconception. This matter was one which we had often heard discussed at home during the last few months, which appeared prominently in the press, and in regard to which we had heard and read statements of so definite a kind that we almost necessarily believed them to be true.

We shall be obliged, therefore, if you would afford us space to state that the statements as to the overstaffing of the medical units of the army in France seem to us to be quite unsupported by facts. We are of opinion that a perceptible reduction of the existing standard may in times of greater activity of "push" and counter-push lead to a condition which would lay the medical organization open to legitimate adverse criticism.

This opinion is founded on facts we had ample opportunity of gleaning for ourselves, since the primary object of our visit brought us into immediate contact not only with the regular officers of the Royal Army Medical Corps, but also with the numerous medical men until recently in civilian practice who hold temporary commissions in that corps, and now form the large bulk of the whole medical service in France. We thus not only saw things for ourselves, but heard the opinion of men who, despite the temptation to return home to look after their own practices, affairs, and personal comforts, continue to perform the duties which they have taken up.

We were thrilled with admiration at the existing perfection of the hospitals, both at the base and the front, and at the marvellous organization which exists throughout the vast medical service. Every detail is considered and seen to, and indeed any suggestions made were everywhere welcomed in the same spirit as one of us indicated in the BRITISH MEDICAL JOURNAL not long after the outbreak of this war. It would be impossible in a letter of this kind to enumerate the thousand and one items which struck us as evidence of the businesslike capacity, spelling efficiency and economy, everywhere apparent.

Wherever we went we found under the varying conditions always the same admirable organization and the same high administrative standard for the prevention of disease, and for the treatment of our sick and wounded soldiers. The special departments which have been created for dealing with ophthalmic, dental, skin, and foot troubles complete an organization which is worthy of the highest and best traditions of the British race. It was a source of pride and confidence to us, who have our only sons serving in the British army, to have at the end of our visit an opportunity to see at the General Head Quarters tables and graphic charts showing us at a glance how every detail is considered and controlled by the Director-General, Sir Arthur Sloggett.

As a member of the War Executive Committee of the British Red Cross Society, which is working in the closest association with the Order of St. John, it is not for me to praise the work which is being done by these two national organizations, but it is known that the aid they give in respect of hospitals and transport is a most valuable auxiliary.

I have the honour to remain yours faithfully,

J. LYNN THOMAS, C.B., F.R.C.S.

P.S.—I have submitted this letter, with the exception of paragraph 1, to my friend in khaki, and he endorses every statement without reservation.

*** In a letter published in the *Medical Journal of Australia* for January 8th, 1916, and therefore written a good deal earlier, Lieutenant-Colonel Gordon Craig, A.M.C., deals with various causes which had prevented the members of the medical profession in Australia from enlisting even more freely than they have.

One of these, he said, was the statement that many medical men are idle at the hospitals in the war area. He called it a half truth, and therefore worse than a lie. "I have realized," he wrote, "that a military organization must be worked out on a maximum, and not a minimum basis, so that when the extraordinary call comes, it may not collapse. The whole history of the war shows big actions, alternating with periods of comparative inaction. During the latter, it is obvious that some men must be idle; but it is in their presence, in their readiness for emergency, that their military strength lies." Another lesson which, he said, must be learnt, was that every man must be ready to do any duty of a medical nature that the requirements of the service demanded. "If an opportunity arises for him to use his special gifts of training, such as that of surgeon or physician, so much the better; let him seize it. But if there is not that work, he must do uncomplainingly the ordinary work of military routine." Another cause of dissatisfaction mentioned was the fear that professional inferiors might occupy a higher position. "This," he wrote, "is bound to happen in a few isolated cases." Medical men are naturally independent, and their training develops that independence, but "as soon as it is realized that the authority is exercised in military matters only, the irksome feeling disappears. Sufficient freedom of thought and action is left to give scope to individuality. If the position is untenable it is always possible to transfer to another unit. In any case matters soon right themselves; the incompetent man is removed to a position more suited to him; and in a game of this sort, what matters it whether a man is captain or a colonel, so long as he serves his country? the rank does not make the man." As to another difficulty—the want of previous military training—he admits that it is real, and adds: "One month's training in the evening by a military instructor would give every medical man enough knowledge to 'carry on' his duties as a military officer. Schools for this purpose could be formed and organized by the local Branches of the British Medical Association."

The Services.

EXCHANGE DESIRED.

CAPTAIN, R.A.M.C.T.F. (civil hospital surgeon), at present in England serving as Medical Officer to Divisional Train, A.S.C., wishes to exchange with an officer in base hospital, or other appointment where surgical work is available, at home or abroad.—Address No. 850, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.

PROFESSORS MARAGLIANO of Genoa and RUMMO of Naples, vice-presidents of the Italian Society of Internal Medicine, have issued an appeal for funds for the erection of a statue of the late Professor Baccelli to be placed in the Policlinico at Rome, in the foundation of which Baccelli took a leading part.

THE Cambridge University Press announces that it has become the agent in Great Britain for the *Journal of Cancer Research* (quarterly), the organ of the American Association for Cancer Research, and of the *Journal of Immunology* (bi-monthly), the organ of the American Association of Immunologists and the New York Society of Serology and Haematology. The subscription price for each journal is 23s.

Obituary.

SIR WILLIAM TURNER, K.C.B., F.R.S.,

PRINCIPAL AND VICE-CHANCELLOR OF THE UNIVERSITY OF EDINBURGH.

(With Portrait on Special Plate)

THE late Sir William Turner's long life was so rich in opportunities and so fertile in fruitful fulfilment that any attempt to enumerate, much more to describe, his activities and their realizations is at once embarrassed by the number of the competing themes and the variety of their interest. For forty years at least there has been little if anything of lasting value achieved in the various departments of scientific medicine and of medical politics with which Sir William has been associated that was not in some measure at least the work of his hands and brain. So complex an achievement cannot adequately be treated in an obituary notice; it demands a biography.

More than eighty-four years ago the future Principal of the University of Edinburgh was born in Lancaster. He received his medical education at St. Bartholomew's Hospital, and it is no less than sixty-two years since Professor John Goodsir chose the young M.R.C.S.Eng. as his senior demonstrator of anatomy in the University of Edinburgh, and so determined once and for all the direction of the activities which were to be so closely bound up with medical progress in the Scottish capital. Turner graduated M.B.Lond. in 1857, and from that year right up to the past week he marched ever onward in the path into which his feet had been led by Goodsir's choice, a more momentous one than the maker of it ever knew. Men who were undergraduates at Edinburgh in the later Fifties of the last century speak of another demonstrator whom some of them think was more brilliant if less gifted than Turner, but he fell out of the running, and the way was open for the Lancastrian to succeed to the chair of anatomy on Goodsir's death in 1867. Having been thirteen years demonstrator, Turner was for thirty-six years professor of anatomy, and then (in 1903) only resigned the professor's chair in order to occupy the seat of Principal of the University, a high place which he filled and adorned to the end. For part of the time he was also Dean of the Medical Faculty. During these sixty years there were many notable occasions in the history of the University of Edinburgh, and in nearly all of them Sir William Turner played an important and often a leading part; mention need only be made of three of the most outstanding—the raising of the funds necessary for the building and opening of the new university buildings and McEwan Hall, the tercentenary celebrations (in 1883), and the establishment and guiding of the Carnegie Trust (from which the University of Edinburgh, in common with the three other Scottish universities, has benefited so conspicuously).

Whilst the appointments which have been named mark what may be called the main current of Sir William Turner's professional life, there were several side streams, some of which became almost as great. There was, for instance, his work on the General Medical Council. To this body he was elected in 1873 as representative of the University of Edinburgh, and he remained a member of it, with the exception of three years (1883–86), till he was made its President (in succession to Sir Richard Quain) in 1898. He occupied the chair till 1904, and remained a year longer on the Council. Then, again, there was the part he played in connexion with scientific societies and medical institutions; he was a member of the Medical Acts Royal Commission in 1881; he was a Fellow of both the Royal Societies (of London and Edinburgh) and President of the latter; he was President of the Anthropological Section of the British Association, and later (in 1900) of the British Association itself; and he was F.R.C.S. of England (1893) and President and Fellow of the Royal College of Surgeons of Edinburgh. Yet again there was the literary current in his life's activities, with its numerous articles embodying the most minutely detailed and scrupulously accurate of researches on human and comparative anatomy, from his work on placentation (an epoch-making classic) through a long series of contributions on craniology to his masterly exposition of *Pithecanthropus;* with the article on "Anatomy" for the *Encyclopaedia Britannica*, which appeared afterwards as a separate volume; and with the conduct and editorship of the *Journal of Anatomy and Physiology*, always a labour of love to Sir William. There was also his connexion with the Volunteer movement from the days when, as Captain Turner, of the Q.E.R.V.B. (IV or University Company), he drilled his men (not a few were also his students) in the quadrangle of the old university, to the more recent days when he was made honorary lieutenant-colonel (V.D.) of the brigade. Only a fortnight before his death he took part in the Officers' Training Corps' service in St. Giles's Cathedral. There were other directions, too, in which his wonderful personality made itself felt, and of some of these, as well as the ones which have been named above, a few of his many friends will record their memories.

So many were the ways in which he influenced others that it is difficult to pick out any one as the most important, yet perhaps first place should be given to his work as a teacher of anatomy. For he not only taught students, he instructed future professors of the subject, and so strong was his personality and so unique was his method that the senior who had reached his third year had not lost the impression he received as a junior attending his first lecture, that ever-memorable one in which Sir William, dealing with the vertebral column, announced that "man was an erect animal," and literally put some backbone into the youngsters listening to him. His lectures were impressive, in fact everything that he did could be so characterized, and one felt instinctively that the information behind them was massive and absolutely exact; his utterance was clear, each word falling with a distinctness which, to quote one of his own favourite expressions, left "no dubiety" in the mind of the hearer; and his habit of looking closely at the object he was describing and only glancing now and again at his listeners had a fascination which kept their gaze fixed on him all the time. No one could doubt that there were immense stores of knowledge behind the facts which he stated with such security, and no one as a rule dreamed of asking a question after lecture in the hope of altering by an iota any pronouncement which had been made. One day, however, a venturesome student drew the professor's attention to a rare anomaly in the insertion of some muscle or in the ramifications of a nerve, and, exhilarated with the thought that perhaps he had discovered a hitherto unrecorded variety, asked his teacher if he had ever seen such a thing before; the reply, given kindly but quite firmly, was that whilst Sir William could not at the moment recall any such occurrence his pupil must not on that account consider that no such occurrence had taken place, for he (his teacher) had seen a great many things and had not tried to retain them all in his mind.

That the expression "he instructed future professors" is no mere figure of speech is shown by the following list (perhaps incomplete) of his pupils who became professors in anatomy: The late Professor Morrison Watson, Owens College, Manchester (who married a sister of Lady Turner); the late Professor D. J. Cunningham, who succeeded him in the Edinburgh chair; Professor Arthur Robinson, late of King's College, London, and Birmingham University, the successor of Cunningham; Professor Arthur Thomson, Oxford; Professor Johnson Symington, Belfast; Professor Robert Howden, Durham University; Professor J. T. Wilson, Sydney University; Professor A. M. Paterson, Liverpool University; Professor P. H. Bryce, Glasgow University; Professor David Hepburn, Cardiff; Professor Richard Berry, Melbourne; Professor James Musgrove, St. Andrews, now succeeded by Professor Waterston, St. Andrews; Professor Primrose, for a time Professor of Anatomy, Toronto University, now Professor of Surgery; Professor Lamont, University College, Dundee.

No life so full and so strenuous as Sir William Turner's could evade honours, and indeed they poured in upon him from all sides. He received his knighthood in 1886, and the K.C.B. in 1901; he was Knight of the Royal Prussian Ordre pour le Mérite; Glasgow, St. Andrews, Aberdeen, Montreal, and the Western University, Pennsylvania, gave him their honorary Doctorate of Laws; from Oxford, Durham, and Toronto came the Hon. D.C.L.; he was an Hon. D.Sc. of Dublin and Cambridge; and he was an honorary member of the Royal Irish Academy, as well

as of learned societies in Paris, Berlin, Rome, Petrograd, Brussels, New South Wales, and other places.

Sir William Turner's chief, if not his only, recreation was foreign travel, and his knowledge of places and things was really extraordinary. He had travelled with enthusiasm all over Italy, France, and Belgium, and he also visited Canada and the United States. His appreciation of ecclesiastical architecture was a part of his great mental equipment, and there were few cathedrals in the European countries above named as well as in England with whose structural features he was not well acquainted. He was undoubtedly a great conversationalist, and his wonderful memory, drawing as it could upon immense stores of facts, made him most reliable when dealing with past events.

An Englishman by birth and ancestry, he had an abounding love for Scotland and things Scottish, and perhaps his friends in the North paid him the highest compliment they knew when they expressed their surprise that he had come from the other side of the Cheviots. In 1863 he married the eldest daughter of Mr. Abraham Logan of Burnhouses, Berwickshire. Lady Turner predeceased her husband in 1908. Sir William Turner is survived by three sons and two daughters. One of his sons is Dr. William Aldren Turner, physician and lecturer in neurology to King's College Hospital, London; another is Dr. A. Logan Turner, lecturer on diseases of the ear and throat in the University of Edinburgh; and the third, Mr. Francis R. Turner, is a farmer in Roxburghshire.

As was announced in the JOURNAL last week (p. 287), Sir William Turner was in the enjoyment of his usual good health until ten days before his death. Then gastric symptoms manifested themselves, and he passed away early on the morning of Tuesday, February 15th.

The funeral service took place in St. John's Episcopal Church, Edinburgh, where for sixty years he had always worshipped, and was attended by so large a gathering of the representatives of public bodies as has been rarely seen.

Sir William Turner as Anatomist and Anthropologist.

Professor ARTHUR KEITH, M.D., F.R.S., Conservator of the Museum of the Royal College of Surgeons of England, writes:

When the medical history of our time comes to be written Sir William Turner's name will find a place in the very first rank. To those who love the spectacular his work will not appeal; like another man, with whom he had much in common—John Hunter—he never startled his contemporaries with any single outstanding unforgettable discovery, yet his life—from the publication of his student effort (under the aegis of Sir James Paget in the summer of 1854) until the publication of his great monograph on the Scottish people at the close of last year—was a continuous succession of discoveries. As they were made he fitted them deftly into the mosaic work of acquired and growing knowledge. To appraise Sir William Turner's life-work at its proper value it has to be viewed, not as a series of isolated, often splendid, fragments or pieces, but in its proper setting—as an intrinsic part of the general progress in medicine which has been made in our time. Like Hunter, he was a builder, not restricted to one single line of endeavour, but covering many fields—physiological chemistry, pathology, human anatomy, physiological anatomy, comparative anatomy, zoology, anthropology, and medical history. Like Hunter he built a great museum; he realized that specimens could still live and speak when the printed word was dead. Unlike Hunter he was a statesman; the progress of the community was as much to him or more than the success of his own affairs. On the thread of his life is strung all the beads of British anatomy for half a century and more.

Sir William Turner's career appeals to me more than any other medical man's of our time. It is so continuous, consecutive, logical, fruitful, and full of the right kind of romance. He was, as he often said himself, a "Lancaster lad"; his father, as I learnt from my friend Professor William Stirling, was an upholsterer; he died at the age of 40, leaving his son William a boy of 5. I have notes of him attending "Teddy" Howard's school some seventy odd years ago and catching "bits of coloured wool with a crooked pin, thrown on the floor by a little girl sitting on a form across the room." In due time he was apprenticed to Christopher Johnston, surgeon, and with him a double influence was brought to bear on the young Lancastrian. When his apprenticeship draws to a close there is no doubt about the hospital he is to proceed to. Richard Owen, a Lancaster lad, was at the height of his fame in 1852 when Turner had to choose his hospital, and, like Owen, he selected St. Bartholomew's. Owen in 1852 was 48 years of age, and was then making up his mind to leave the College of Surgeons for the British Museum. Turner was a lad of 20 in 1852. Paget had just finished the catalogue of the Pathological Collection at the Royal College of Surgeons.

When Turner arrived as a student Sir James Paget was 38 years of age, had given up the resident wardenship of the school, and borrowed money to become the tenant of 24, Henrietta Street. Turner's old master, Christopher Johnston, had engrafted a love and knowledge of chemistry in his pupil; in 1854 Turner is awarded honours in chemistry by the University of London; his personality and his knowledge won him a high place in Paget's esteem. In the same year (1854) Paget communicated Turner's paper to the Royal Society—the one in which he shows that the reducing substance in cerebro-spinal fluid is not a sugar. The fluid had been drawn from a case of spina bifida under Paget's care.

I have said Turner's life is full of romance. When he left Lancaster he followed in Owen's track; the next turn of the wheel of fortune sent him off to Scotland—right into the heart of the most jealous and keen of all medical corporations—the heart of medical and particularly anatomical Scotland. It was Paget who turned the wheel. That grim Calvinist, John Goodsir, the best student of the human body Scotland ever produced, was ill with overwork and with the disease which was ultimately to wreck his health, when he came to see Paget at St. Bartholomew's in 1854. He looked then old and worn, but he was exactly the same age as his friend Paget—42. The result of Goodsir's visit was that Turner was installed as senior demonstrator of anatomy in the University of Edinburgh. But there were three connexions formed at St. Bartholomew's Hospital which were to exercise a permanent influence on Turner's career. There was, in the first place, the close tie he had formed with his teacher, Sir James Paget. In 1863, when a second edition of *Lectures on Surgical Pathology* was called for, the task of preparation fell on the senior demonstrator of anatomy in Edinburgh. There was the intimate friendship which he had formed with his fellow-student at St. Bartholomew's, George Rolleston. What the one did at Oxford the other did in Edinburgh, and vice versa. When Rolleston's premature loss to science occurred in 1881, it was his friend Turner who collected his papers into two volumes, and edited them in company with Professor E. B. Tylor of Oxford. Rolleston's marked bent towards anthropological investigation had an undoubted influence on Turner. There is still another St. Bartholomew's connexion of his which has had an important bearing on the development of anatomical literature in this country. It was through his hospital and through Paget that Turner's friendship with George Murray Humphry of Cambridge was formed. Humphry was Turner's senior by twelve years; Humphry had left St. Bartholomew's ten years before Turner entered it. When Turner set out for Edinburgh in 1854, Humphry was a deputy teacher of anatomy and surgeon in Cambridge. When in 1867 a proposal was broached for a journal to serve the needs of British anatomists and physiologists, it was the two "Bart's" men who conceived and carried the scheme through. By their means they gave an enormous impetus to the progress of anatomy amongst English-speaking peoples. There is another St. Bartholomew's student whose name richly deserves to be recalled because of its connexion with anatomy and with Turner—the late Mr. C. B. Lockwood. Turner and Humphry founded the *Journal of Anatomy* in 1867; twenty years later Mr. Lockwood, with the help of Humphry and of Turner, founded the Anatomical Society. St. Bartholomew's School had no professed anatomist in those days, yet it formed the cradle of the three leading British anatomists of the Victorian period.

I do not suppose that William Turner, when he went to Edinburgh in 1854, had the least intention of making a

home there, any more than Lister had when he went to see Syme at a rather earlier date—1852. Lister was getting married when Turner joined Goodsir in Edinburgh in 1854. We soon find those two young men making a combined research—using carmine as a differential stain for the axis cylinder of nerve fibres. In those days Lister was really an anatomical physiologist—perhaps "biologist" is the better term for him—and Turner was a physiological anatomist. In the dissecting-room at Edinburgh Turner came under the spell of Goodsir—no man of parts could resist that spell. Goodsir proved to be Turner's real master—not Paget. Through Goodsir he absorbed the spirit and the traditions of the Edinburgh school—the standard set by the Monroes, by Barclay, by Knox, and, above all, by Goodsir himself. The Edinburgh anatomists took a wide view of their subject; mere applied or surgical anatomy was held at a discount; they desired their subject to be regarded as a science, resting on a basis of comparative anatomy. Hence the catholicity of their pursuits; one day they are dissecting some fish or whale; on the next they are recording the anomalies of the human body or seeking to apply morphological laws to its structure. For eleven years Turner served under Goodsir; he had Professor Clelland and Professor John Chiene as junior colleagues in the dissecting-room. In 1867, at the age of 35, he succeeded to the chair of anatomy when Goodsir's tragic end came at the age of 53.

Before he succeeded to the chair certain events occurred which gives us a key to his strong, firm, honest nature. In 1863 Huxley came down to Edinburgh and gave the substance of "Man's Place in Nature" in the form of public lectures. His teaching and deductions were thoroughly distasteful to the orthodox public; Owen and Goodsir were in sympathy with the public point of view, and made no secret of their opposition to Huxley and to Darwin. It is quite clear from papers published by Turner during the period of the Owen-Huxley controversy —"Anatomical characters of a human cranium found at Amiens" (1863), and "On human crania, allied in anatomical characters to the Engis and Neanderthal skulls" (1864)—that he makes his position quite clear; Goodsir's opposition did not prevent his becoming a follower of Darwin and a believer in evolution, but his statements are temperate and judicious and destitute of that sting which rouses unscientific controversy. He was a statesman even when he was arguing a scientific truth.

It is of importance to note the "Owen-Huxley" controversy, for that and the discovery of the remains of prehistoric men about the same period induced many anatomists to apply themselves to that ill-defined branch of knowledge now known as "anthropology." Turner's enthusiasm for the subject dates from the Owen-Huxley controversial period. When his students went to their homes at the end of a session they were duly impressed with the documentary value of human skulls—ancient and modern—and the need of gathering and saving such things. When these same students became graduates of the university, and came to hold medical posts abroad, they never forgot the teaching and craniological needs of their old professor. By such means Sir William Turner collected in his museum representations of all the races of the world. His classical monographs on the craniological features of the Scottish people, both ancient and modern, on the peoples of the empire of India, on the extinct natives of Tasmania, on the natives of New Guinea and of Borneo, were based on material which he gradually accumulated—chiefly through the help of his devoted pupils. He was the first to make an accurate study of the development of the lumbar curvature. In anthropology and in anatomy he was a master builder—not an architect.

For over sixty years he issued some four or five papers annually—some small, others great, but always replete with first-hand observation. A survey of his scientific career shows that he followed the normal course of our greatest workers; he spent the latter two-thirds of his active career in completing conceptions he had formed in the opening third. In 1862 he fell, as Knox and Goodsir had done before him, a victim to the structural fascination of whales; only three years ago he compiled, completed, and published an excellent and richly-illustrated catalogue of his whale collection under the title of *The Marine Mammals in the Anatomical Museum of the University of Edinburgh.* In 1866 appeared his first work on the brain; for twenty years the brain formed one of his chief studies. He began a study of the comparative anatomy of the placenta in 1871; he made placentation a chief subject for investigation for nearly a score of years. If we set out now to make inquiries on any of these subjects, we can be certain of getting help and accurately observed data from his papers, and our successors for many generations will have reason to bless him. He had an unbounded capacity for work and for taking pains, and the most marvellous aspect of the whole of his career was his ability to combine a life of extraordinary scientific industry with one laden with administrative duties—sufficient to tax the whole time and strength of most men. He was that rare combination—a statesman and a researcher. He was for fifty years the outstanding figure in British anatomy.

Turner as a Teacher.

Dr. Arthur Thomson, Professor of Human Anatomy in the University of Oxford, writes:

Sir William was one of the ablest men I have ever known. That is high praise. I lay no claim for him of outstanding genius, but for sheer ability I have not met his equal.

He combined, in a remarkable degree, high attainments in science with unusual business capacity, a blend which, despite the recent correspondence in the press, is oftentimes remarkably scarce. He possessed, too, a shrewd knowledge of men, a keen sense of justice, and an appreciation of the subtleties of diplomacy. In finance his views were sound, if somewhat conservative. There was nothing speculative in his policy, he would take no risks, but when occasion arose he would back his opinion.

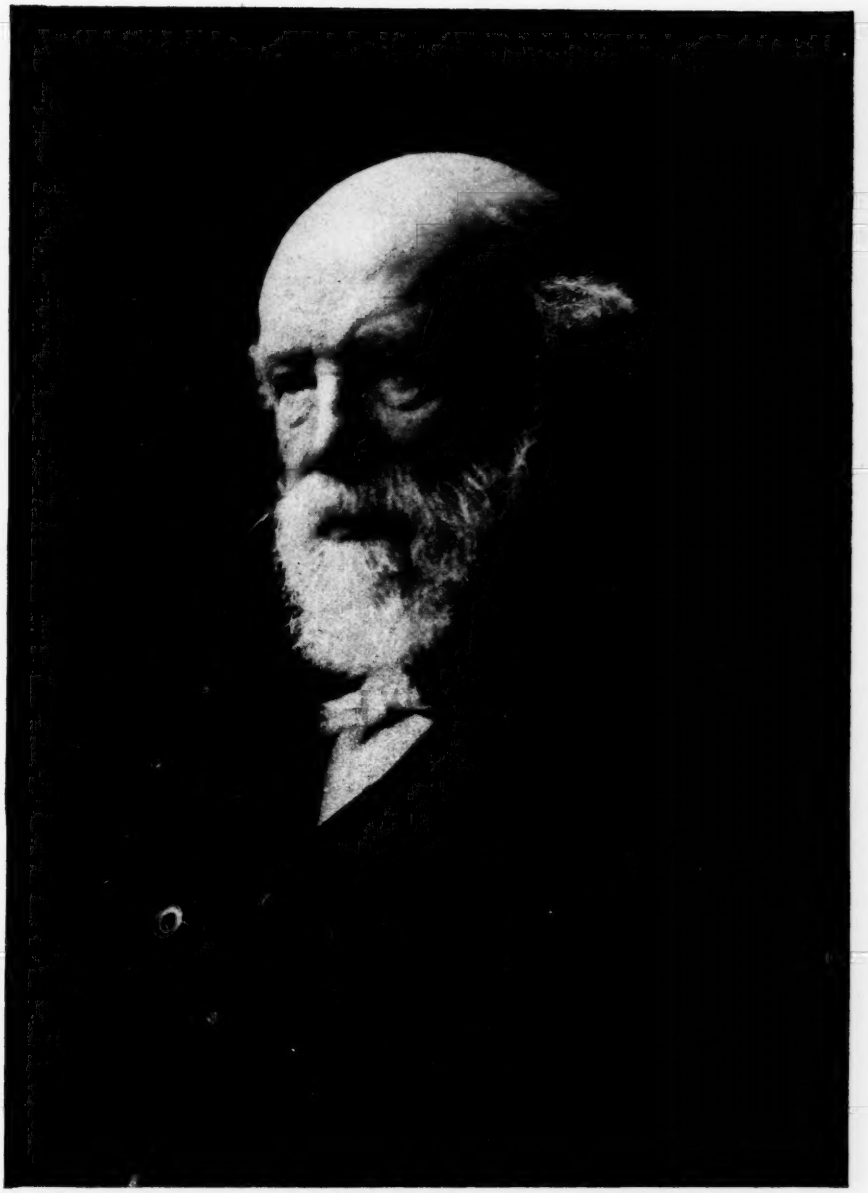
It is of him as a teacher, however, that you have asked me to write. That takes me back a long time—to the winter of 1875—but after forty years, the memory remains as fresh as if the incidents had happened yesterday. I confess at the time of my first introduction to the anatomical department I did not know whether I was most impressed with the vigorous personality of the professor or the uncouth appearance of the gigantic James, the dissecting-room porter.

To us boys, university professors were as gods, impersonal and beyond reproach, awe-inspiring and all-powerful. There were exceptions, of course, men, brilliant though they were, unable to control the exuberant spirits of their pupils. Turner was not one of these. When his voice was heard, as he entered the dissecting-room, all was stilled, and every one endeavoured to display an unwonted interest in his work. There was never any rowdy element in his class; if some adventurous spirits were courageous enough to attempt an interruption the disturbance was soon quelled. The method was simple but effective. The professor stopped abruptly in the middle of a sentence, concentrating his gaze—a not altogether pleasant gaze either—on or in the neighbourhood of the offenders, and thus waited till the noise stopped. He had not long to wait, for I never yet met the man who could withstand that stare; then when silence was restored, the professor finished his sentence without further comment, and proceeded with his lecture. That was my first lesson in the discipline and control of a class—Look very fierce, keep perfectly calm, and say nothing.

It was, perhaps, as a demonstrator that the professor was most successful. In those days the class met at 4 o'clock—a sleepy hour; but despite this, he kept the interest of the men awake and keen. I have often heard it said what a wonderful thing it was that Turner could lecture, for an hour on end, on the superficial fascia of the thigh; it was not mere "word slinging," but a carefully elaborated description devised to bring out the salient points.

His teaching was dominated by a sound perspective. The main features were emphasized by repetition and appropriate reference to points of practical and scientific interest, whilst the details were not unduly enforced. In this way the student carried away an effective and useful impression of the subject treated. In my opinion, the virtue of this method has been too much lost sight of in these latter days, and now the student very often cannot "see the wood for the trees," a criticism which applies equally to the modern textbook descriptions as well as to the oral instruction.

As illustrating this aspect of Turner's teaching, a story is told, the authenticity of which I cannot vouch for.



Photo] [*Moffat*

SIR WILLIAM TURNER, K.C.B., F.R.S.

Goodsir, it appears, was in search of a demonstrator, and, happening to be in London, called on Paget to see if he had any promising pupil. Young Turner was introduced, and, being requested by the great anatomist to give a sample of his capacity by demonstrating the sartorius muscle, the nervous youth at once proceeded: "The sartorius, the longest muscle in the body, takes its . . ." "That will do," interrupted Goodsir, and promptly gave him the post.

As a lecturer he was remarkably illuminating, particularly when dealing with some abstruse point, but the ordinary undergraduate never saw him at his best, for he was handicapped by having to cover the whole subject of anatomy in the course of a hundred lectures. None the less, the summary which he presented to his pupils, and of which I still retain the notes, was most skilfully drawn up, and of extreme value from a didactic point of view. His lectures were prepared with great care, and it was this which brought me first into more intimate contact with him, because, as a student, I was frequently requisitioned to prepare the diagrams necessary to illustrate new points. Hitherto I had known only the official side of the man; now I had opportunities of making acquaintance with the softer side of his nature. My subsequent association with him for five years as one of his assistants enabled me more fully to appreciate his virtues as a master, and kindness as a friend. What particularly impressed me was his thoroughness: no labour was too arduous, if only it revealed the truth. He possessed the infinite capacity for taking pains which resulted in the accumulation of that great store of valuable research which now stands to his credit.

Most men are content to exhaust the fruits of their originality by middle age; Turner continued to the last to retain his interest in research, and that too at a time when his duties as Principal and Vice-Chancellor might reasonably have been regarded as sufficient to tax the energies of a man less capable and strong. He regarded research as a relaxation from the tedium of office work, and his last paper on "The craniology of the people of Scotland," published in the *Transactions* of the Royal Society of Edinburgh for November, 1915, reveals no weakening of effort or performance—a remarkable feat for a man over 84 years of age.

Those only who knew Sir William intimately can estimate the worth of the man. His affection for his university was an outstanding feature. The land of his adoption never had a stouter champion, and colleagues and pupils never a truer friend, but what perhaps we, who knew him well, realized more than most, was that love of home and family which stirred his heart. To us, too, was revealed that hidden fund of humour which few acquainted with him suspected. No doubt to these traits in his character is due the success which he attained in enlisting the sympathy of wealthy benefactors to his university. For this alone he has earned widespread recognition and gratitude.

To me, who have enjoyed his ever-helpful friendship and almost fatherly affection, the loss is sore and grievous, yet tempered with the satisfaction that he has fought the good fight, that he has left a record which few can equal, and that now he is at rest.

Dr. ARTHUR ROBINSON, now Professor of Anatomy in the University of Edinburgh, writes:

Sir William Turner was associated with the anatomy department of the University of Edinburgh for a little over sixty-one years—thirteen years as chief assistant, thirty-six years as professor of anatomy, and for the remainder of the period, up to within three weeks of his death, whenever he could find opportunity amidst his multifarious duties, he continued his anatomical research upon cetacea and in craniology. Indeed, there is still set apart, in the small private workroom reserved for him in the anatomy department, a series of New Guinea skulls which he proposed to investigate and report upon.

The anatomy department, as it stands to day, was his creation. It was built under his supervision, whilst he was professor of anatomy, and is a visible illustration of his grasp of the necessities of his subject and of his foresight for its advance, for when the department was built it was a great improvement upon anything which had preceded it, and it still holds a high place for its utility and adaptability. In it and in the old buildings, now given over mainly to arts and science, he carried out his numerous and varied investigations with the care, exactitude, and insight which characterized all his work, and placed it on the highest plane; but to those who were fortunate enough to be his pupils, it is not so much the greatness of his life-work and the admiration which it has excited which appeal to them, but rather his character as a teacher, controller, and a man.

His lucid expositions made the most difficult subjects simple; his knowledge of comparative anatomy gave a charm to details of human anatomy which might, without the association, have seemed dry and uninteresting; and the stern discipline which he enforced in his department produced energetic and faithful work. The sternness was, however, largely superficial; beneath it there lay a very human interest in and sympathy for every one who passed through his hands. His complete knowledge of all his students was not the least of his many remarkable characteristics, and he was always ready with advice and help for any one who desired the one or deserved the other. He detested carelessness, but he admired and encouraged work; in fact, he gloried in work, and one of the secrets of his success, which he retained to the last, was a youthful enthusiasm for work, not only as an administrator but also in investigations on the subject which had occupied the greater part of his life; and whilst he worked he gained the respect and esteem of all who were associated with him.

The General Medical Council.

We are indebted to Sir DONALD MACALISTER, K.C.B., who succeeded Sir William Turner as President of the General Medical Council, for the following note:

When I joined the Medical Council in 1889 Sir William Turner had already been a member for thirteen years. He had served from 1873 to 1883 as representative of the Universities of Edinburgh and Aberdeen, and after an interval of three years, when the joint seat was occupied by Sir John Struthers, he had been returned as representative of the University of Edinburgh under the Medical Act of 1886, and he continued in office till his resignation in 1905. His intimate knowledge of medical legislation, in the shaping of which he had borne an active part, his scientific eminence as an anatomist, and his force of character as a man, gave him a strong position in the Council. His contributions to our discussions were always clear, emphatic, and weighty. Many important decisions were taken on his initiative, either in Council or in Committee. Many of our most valuable reports were drafted or re-fashioned by his hand. On matters of medical education, particularly as it is apprehended in Scotland, his authority was admitted. Though his birth and training were English, he approached educational questions from the Scottish point of view, and he harboured no doubts as to its excellence. He was in the succession of the great teachers who had brought the Edinburgh school to the height of its expansion and of its fame, and he gave their due value to its characteristic methods and aims. Other ways might be favoured in the South, but he had misgivings about them; and he often confessed to a certain perplexity in judging of their intrinsic merits. In some respects he had become *Scotis ipsis Scotior*. In our judicial inquiries he was notably free from hastiness or prejudice. He weighed the evidence for and against a practitioner with candour and caution; and though jealous for the corporate honour of the profession, he took full account of what might be said in extenuation of individual offences against it. He possessed the "judicial mind." As a junior member I have often heard my seniors, during an informal discussion of some difficult case, ask one another: "Do you know what Turner thinks about it?"

It was, therefore, not surprising that when the Presidency was vacant through the death of Sir Richard Quain in 1898, Sir William Turner was by common consent called to the chair of the Council. From 1858 onwards his predecessors had all been chosen from the English branch. He was the first President from beyond the Tweed. His position was not always easy. The finances of the Council were not satisfactory. There were thorny questions, personal and professional, that called for careful handling. Criticism of the Council and its officers was free and not always friendly. Reforms of procedure and administration had to be carried through in

the face of opposition that was not readily conciliated. But the President's manifest fairness and firmness, his grasp of executive detail, and his power of evoking loyal support, enabled him to win through. And when he resigned the chair in November, 1904, the members spontaneously offered him the tribute of their grateful esteem at a banquet which will long be remembered by those who were privileged to be present.

It was at the special request of myself, his successor in the chair, that he continued for nearly a year to retain office as an ordinary member of the Council. I was anxious that we might not at once lose the benefit of our Nestor's wisdom and experience. In other hands than his the situation might have been awkward, but his tact, good feeling, and surety of judgement never failed. The new President and the Council as a whole profited greatly by the counsel and the active helpfulness of the President Emeritus, and when at last he retired, on the ground that he had reached his seventy-fourth year and needed rest, he carried with him the loyal affection and regard of all his colleagues.

The University.

Sir LUDOVIC J. GRANT, Bt., LL.D., Professor of Public Law in the University of Edinburgh, Secretary to the Senatus Academicus, writes:

I willingly accede to your request that I should write a few lines in appreciation of the great leader whose loss all here are now deeply mourning.

The influence—so wise and so beneficent—which Sir William Turner exercised over the affairs of the University of Edinburgh must not be measured by the comparatively brief period of his reign as Principal. He was an active force in academic administration *Consule Planco*—in the Seventies and even in the Sixties. Engrossing as the duties were which devolved upon him as professor of anatomy—namely, the systematic instruction of the largest class in the university and constant attendance in the dissecting-room—"Turner's Conservatory," as Sir Alexander Grant nicknamed it—he nevertheless found time to make himself a thorough master of university business, especially on its financial side. Long, then, before he was actually installed as Principal, he had become a moving spirit, one of the most vital and kinetic elements, in that mysterious entity known as "The University Authorities." It is this that makes it so difficult—for the older members of the Senatus, at any rate—to imagine what the university will be like without Sir William Turner.

It was characteristic of the late Principal, and indicative of his superabundant energy and earnestness of purpose, that even his relaxations were serious. Unconsciously, he directed his own life in accordance with the precepts of the old Scots ordinances which, in the interests of archery, forbade young men to devote themselves to golf and football. So long as bodily activity remained with him he took his recreation chiefly in the form of volunteering, and it is common knowledge how enthusiastic and efficient an officer he proved himself, and how magnificently he trained the University Company of the Q.E.R.V.B. For ordinary games he had no taste. This, however, does not mean that he disapproved of them, still less that he discouraged them. He was fully alive to the importance of furnishing students with opportunities of athletic exercise in all forms.

Nothing, moreover, could be more misleading than to represent the late Principal as solemn or austere. With his high sense of the responsibilities of life and of the importance of work, and his intense devotion to duty, he combined a most genial disposition, a delightful bonhomie, and abundant humour. These lighter attributes were seen, perhaps, to their best advantage when he presided at 'Symposia Academica" or at the dinners which he was in the habit of giving on the night preceding graduation ceremonials for the benefit of those who were to receive honorary degrees. He entered *con amore* into the spirit of such occasions, and it was delightful to witness the enjoyment which he himself derived from them.

Those of us who were privileged to come into daily contact with him have suffered by his death an immeasurable loss. He was so considerate, so helpful, so willing to spare trouble to others, and so unsparing of himself.

Some Reminiscences.

The following is from Sir A. R. SIMPSON, who was apprenticed to Professor Goodsir in 1852, and acted as class assistant to Dr. (afterwards Sir John) Struthers when in charge of the anatomical department in the university on the occasion of a threatened breakdown in the health of the professor:

In the autumn of 1854, when Goodsir returned from a year's rest in the Riviera, he brought with him from London three young surgeons to be his demonstrators. They were obtained respectively from his friends Professor Sharpey of University College, Sir William Fergusson of King's, and Sir James Paget of St. Bartholomew's Hospital. Frederick W. Sayör, who was spoken of in glowing terms by Dr. Carpenter, died of fever after a short period of service here. A. M. Edwards was more surgeon than anatomist, and, after serving for a few years in the dissecting-rooms, entered on a brilliant surgical career in Edinburgh that ended obscurely in Australia.

Chief of the three was William Turner. From the first Paget's pupil seemed to grasp the opportunities of the new position and to be grasped by them. They favoured the development of those fine qualities that by-and-by were to be exercised in the higher spheres of the professoriate and principalship so as to win for him the admiration and affection of thousands of students, and of all his colleagues in the Senatus, the University Court, and the Court of Curators, and to enable him to render services that will make his name indelible in the story of our university. Foremost among the influences that went to the making of him was the personal influence of John Goodsir. He clearly brought with him from his home great natural abilities and a well-directed disposition which had been fostered through his friendship with Sir James Paget, that great surgeon and good man who has left an inspiring memory for our profession. But with Goodsir his demonstrator's intimacy was to be closer and more prolonged. Even in attitudes and actions Turner unconsciously assimilated some of his master's peculiarities. If any one recalls that some time in talking with him as professor or principal he felt himself touched on the left shoulder, he may know that he was only experiencing what Turner had often experienced. For Goodsir had a trick of shooting out the right forefinger to impress on an assistant any duty he was entrusting to him or fact of science he sought to enforce. What was more important for the young Englishman was that he began early to take colour from his new master in his habits of clear conception of duty, his untiring industry, his delight in pure scientific research, and his firm apprehension of the spiritual aspect of the universe. I refer especially to this last element in the make-up of my friend, for other points in his impressive character and career will be abundantly illustrated by other pens.

The works of Goodsir, edited by Turner, are marked by a patient, serious search for truth, and where need arises, in the presence of the mysterious, by a reverent acknowledgement of the Divine, for he did not dally with agnosticism. The same mind is found in the works of his successor. It may be felt in his address from the chair of the British Association, a position from which the "promise and potency" of more matter had been so frequently proclaimed. Still more, if he had to address his students on their graduation day, the man who could give the shrewdest advice as to their outlook on life, would remind them that "wisdom is the principal thing," and tell them where to seek it. So, also, if he read the Scripture lesson in some university function, or took the chair at one of Dr. Kelman's Sunday evening meetings arranged by the Christian Union in the Operetta House, the men could recognize in his voice a ring of reality that helped them to feel that the service was not mere routine. When we once came out together from one of Professor Henry Drummond's meetings with students in the Oddfellows' Hall, after discussing the man and his message, Turner said: "After all, that's just what I'm always trying to teach the men."

About three years ago I sent him a reprint of a paper from the *Expositor* upholding the scientific view of Dr. Stroud as to the physical cause of the death of Christ. He sent me a long typograph in reply, strongly endorsing from his own pathological observation and reflection

the theory of the broken heart, and adding some criticisms as to the testimony drawn from the works of artists. The editor of the journal was prepared to publish the letter, and Turner consented, but first asked it back as he wanted to make some further investigations among the great paintings with the help of his friend, the Rev. Dr. Gordon Gray, in Rome. About a year ago I pressed him to publish his observations, which he said he was quite willing to do, but was still waiting for the collaboration of Dr. Gray. It must have been at that same call on him that he spoke of an article in the new Y.M.C.A. magazine on "Surgical assuagements of war," in which it was indicated that some of the men to whom the world was indebted in this direction were confessedly Christian men. Among these necessarily was the name of Lord Lister. Now Lister came to Edinburgh only a couple of months or so after Turner. The two young men drew together and became fellow-workers and fast friends. I do not know that I ever saw Turner exhibit more emotion than on that occasion when, referring to his old colleague, he said, "I have a place where I keep memorials of Lister, and I have put the little article among them."

John Goodsir, James Paget, Joseph Lister are shining names in the firmament of science. The three each laid their crown at the feet of Christ. William Turner was a kindred spirit.

DR. FRANCIS GETHIN HOPKINS, late P.M.O. Gold Coast Colony, died at Plymouth on February 2nd, while serving as Lieutenant R.A.M.C. He was in his fiftieth year, and was the son of the late Rev. J. W. Hopkins of Ahern, Fermoy. He graduated B.A., T.C.D., and took the M.B., B.Ch. (1888), and the M.D. (1903). After some years as resident to the City Fever Hospital and the Brownlow Hill Infirmary, Liverpool, he entered the West African Colonial Medical Service in 1894. He served with the Anglo-French Boundary Commission between Dahomey and the old Colony of Lagos, and was promoted senior assistant colonial surgeon, Lagos, in 1897. He became senior medical officer on the formation of the West African Medical Staff in 1902, was promoted Deputy P.M.O. on the amalgamation of S. Nigeria and Lagos in 1906, and P.M.O. Gold Coast in 1911. For many years he was M.O.H. Lagos, and also a member of the Executive and Legislative Councils, Gold Coast. During his administration of the Medical Department of the Gold Coast Colony the scope of his activities was widely extended by the development of the sanitary branch, and no small share in the improvement in health conditions must be attributed to the department over which Dr. Hopkins has presided. He was instrumental in obtaining provision of pensions to widows of men in the W. A. medical staff. Dr. Hopkins was a Freemason and helped to found two lodges and a chapter in West Africa. Dr. Hopkins's career in the West African Medical Staff was characterized by serious and energetic work, and he was held in high esteem by natives and Europeans. On his return home in September last he accepted a commission as Lieutenant in the R.A.M.C. and was appointed Medical Officer-in-Charge Troop Citadel Barracks, Plymouth. On January 27th he developed pneumonia, probably post-influenzal, and died on February 2nd. The funeral, which took place at the New Cemetery, Plymouth, was attended by full military honours. Dr. Hopkins leaves a widow and four children. A friend of more than thirty years writes that Dr. Hopkins, though a man with high ideals of and devotion to his work, was also a keen sportsman. He was an expert fly fisher and a good shot. It is, he adds, sad to think that after a strenuous career of working for his country he has been taken away when he might reasonably have hoped for many more years of useful and active life.

SURGEON-MAJOR FREDERICK CARTER, Bengal Medical Service (retired), died at Wearden Ash, Ongar, on January 24th, aged 85. He was born on March 20th, 1830, took the diploma of M.R.C.S. in 1832, and entered the I.M.S. as assistant surgeon on August 4th, 1855, becoming surgeon on August 4th, 1867, and surgeon major on July 1st, 1873. He retired on April 25th, 1887. He served in the Indian Mutiny with the 17th Light Field Battery, Bengal Horse Artillery, and with the Punjab movable column under Brigadier-General Nicholson, and received the Mutiny medal.

Medical News.

SIR JOHN ROSE BRADFORD, K.C.M.G., C.B., M.D., F.R.C.P., Colonel A.M.S., has been elected President of the London and Counties Medical Protection Society, Limited, in place of the late Dr. George Allan Heron.

PROFESSOR WEINBERG, Chef de Laboratoire, Institut Pasteur, Paris, will give a Dr. James Finlayson lecture in the hall of the Royal Faculty of Physicians and Surgeons of Glasgow (242, St. Vincent Street) on Tuesday next at 4.30 p.m. The subject will be gas gangrene, and all medical practitioners are invited to attend.

A NATIONAL congress on home problems after the war is being arranged by the National Housing and Town Planning Council, to consider the preparation of housing schemes for the building of urban and rural cottages, and the need for Government aid in the preparation by local authorities of schemes for the clearance of insanitary areas. It hopes to assist in the preparation of town planning schemes in anticipation of future developments. The congress will be held in London from April 11th to 14th. Further particulars can be obtained on application to the secretary at 41, Russell Square, London, W.C.

MEETINGS of the Central Midwives Board were held on February 17th and 18th for hearing penal charges. Sir Francis Champneys presided. The reports on four out of six adjourned cases were satisfactory, and the other two were again adjourned for a month. Twelve fresh cases were heard, and in four instances the women were struck off. Judgement was postponed in three cases; three other women were censured, one case was dismissed, and the remaining one concerned an old woman of 81, whose resignation the Board accepted. Allegations of neglect in respect of ophthalmia, rupture of the perineum, and delayed labour were among the charges. One woman, it was alleged, in a case of twins of which one was still-born and the other died before the arrival of a doctor, herself took the bodies to the cemetery in a cardboard box and buried them in a hole 6 in. deep. The monthly meeting was held on February 16th. The Standing Committee reported a letter from the Town Clerk of Rotherham with reference to an apparent case of "covering" of an uncertified woman by a local practitioner, and asked the Board to make the necessary representations on the subject to the General Medical Council. The secretary was instructed to take the necessary steps. The names of sixteen women were removed from the roll on their own application. The chairman reported that arrangements had been made for temporary accommodation during the completion of the new offices.

As chairman of the board of governors, Dr. Edwin Rayner, J.P., Treasurer of the British Medical Association, presided at the opening of the fine new buildings of the Stockport Grammar School erected to replace those opened in 1832, which had become too small. Dr. Rayner recalled the history of the foundation of the school in 1487 under the will of Sir Edmund Shaa, some time Lord Mayor of London, who was born at Dukinfield, near Stalybridge; he left certain land in the City of London to the Goldsmiths' Company, the proceeds of which partly paid for the upkeep of the school to this day. Colonel Dixon, chairman of the Cheshire County Council, in declaring the building open, said that there were only two other public schools in the country which had more ancient foundations—Winchester (1387), and Eton (1441). The school was transferred by the Goldsmiths' Company to the Corporation in 1860, and had been enlarged from time to time. In proposing a vote of thanks to the chairman, Canon Bird said that not only Stockport, but the whole of Cheshire, knew the great educational work Dr. Rayner had done. He recalled the fact that Dr. Rayner had himself been a boy at the Stockport Grammar School; his interest in it had continued to the present day. Sir Thomas Holland, in seconding, congratulated the governors on the great growth of the school. Dr. Rayner, in acknowledging the vote, said it was the duty of the community to afford to every responsible man an opportunity of becoming a good citizen, and to teach the duties of citizenship would be, he hoped, one of the principal objects of the school. The new buildings contain a fine Hallam assembly hall, called after the Mayor of Stockport in 1860; a Sykes lecture room, named after a former chairman of the governors and a generous benefactor; a manual training room, fitted with benches; and a Norris gymnasium, named after two old boys and benefactors.

Letters, Notes, and Answers.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C., on receipt of proof.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

THE telegraphic addresses of the BRITISH MEDICAL ASSOCIATION and JOURNAL are: (1) EDITOR of the BRITISH MEDICAL JOURNAL, *Attiology, Westrand, London;* telephone, 2631, Gerrard. (2) FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London;* telephone, 2630, Gerrard. (3) MEDICAL SECRETARY, *Medisecra, Westrand, London;* telephone, 2634, Gerrard. The address of the Irish office of the British Medical Association is 16, South Frederick Street, Dublin.

☞ *Queries, answers, and communications relating to subjects to which special departments of the* BRITISH MEDICAL JOURNAL *are devoted will be found under their respective headings.*

ANSWERS.

NASCENT IODINE IN PHTHISIS.

IN reply to a correspondent in India, who asks for information on the subject, we may say that Dr. E. G. Reeve administers a dose of 20 (once he gave 30) grains of potassium iodide in half a pint of water at breakfast time, and an ounce of chlorine water in half a pint of lemonade four hours later, the draught being repeated at two hours' interval until sufficient has been given. In starting, three ounces of chlorine are administered daily. Signs of iodism usually develop, but are soon relieved. At the end of three weeks the dose of chlorine water is increased to four, and later to five ounces. The chlorine water must be very carefully prepared by the action of 2 drachms of strong hydrochloric acid on a drachm of powdered potassium chlorate in a dry 24 oz. bottle.

LETTERS, NOTES, ETC.

THE Central Committee for National Patriotic Organizations, of which Mr. Henry Cust is chairman, and Sir William Grey-Wilson, K.C.M.G., secretary, has issued a report on its work from its institution in August, 1914, to the end of January, 1916. Its object, which was strongly commended to the country by Mr. Asquith, Lord Rosebery, and Mr. Balfour in November, 1914, is mainly to disseminate information at home and in neutral countries. It has not, for want of funds, been able to undertake any systematic explanation of the British position in the newspaper press of foreign countries, but it has distributed much printed information to the universities and libraries in the various countries, as well as to influential politicians and teachers. It appeals for further assistance in money and in personal service, particularly by way of communications to foreign friends. Its offices are at 62, Charing Cross, London, S.W.

PETROL DUTY.

F. E. G. inquires as to a rebate on the petrol consumed in the professional use of his motor cycle.

*** The Act of Parliament refers to "motor cars" only, but a refusal to apply the rebate to motor cycles would be inequitable and uneconomic. In a case which was brought to our notice some time ago the rebate was at first withheld but granted on reconsideration.

INCOMPATIBILITY.

DR. H. DRINKWATER sends us a copy of a note he published in the *Liverpool Medico-Chirurgical Journal* (July, 1911), in which he said that for the previous fifteen years he had found a mixture containing sodium salicylate and liquor ferri perchloridi useful in rheumatic conditions associated with anaemia, and especially in a kind of sore throat with slight redness of the pharynx, and pain, especially on swallowing, which he believed to be rheumatic. He gives the following directions for making the mixture:

For an 8 oz. bottle, take 1 drachm of sodae salicylas dissolved in about 2 oz. of water. Add liquor ferri perchloridi, half a drachm + about an ounce of water. This produces a dark purple mixture, with a precipitate, thick and curdy in proportion to the concentration of the mixture. Then add 1 drachm of potass. bicarb. dissolved in 1 oz. of water, and fill up to 8 oz. with water. The precipitate dissolves on the addition of the potassium solution, and the result is a clear, claret-coloured mixture of an agreeable taste. The colour is lighter still if a little more potash be added.

Theoretically, 218 grains of sodae salicylas is equivalent to the iron in 1 fluid ounce of the liq. ferri perchlor., but *practically* only about one-quarter of this amount of iron can be used. If more liq. ferri is used than in the above prescription, there will be an active effervescence on the addition of the bicarbonate. With the above quantities there is no effervescence. (Of course, it would not do to mix the iron and the bicarbonate *before* adding the salicylate.)

THE PROPHYLAXIS OF DENTAL AND GINGIVAL SEPSIS.

MR. G. S. THOMPSON, F.R.C.S.Eng. (Sydney, Australia) writes: Having good teeth myself, and having given a good deal of thought, reading, and trial to methods for dental conservation, I would like to urge for adoption, amongst other things, a very simple but most effectual method for preventing food deposition on and consequent decomposition in and around the teeth. I am inclined to think that the too frequent use (that is, after every meal) of the toothbrush—especially if hard—is irritating to the gums, and may tend to lower their resistance and favour infection (pyorrhoea). I have reduced this part of the toilet to once a day following the last meal, and during the course of the meal the fluid taken before being swallowed should be vigorously moved backwards and forwards, from side to side, up and down in the mouth, thus passing over and between the teeth and washing off immediately any food deposited thereon. This is not really objectionable, as will be seen after a moment's thought, but it is highly objectionable to allow food (particularly the soft sticky kind) to collect, to render its removal much more difficult, become putrid, and set up inflammation. The food, if washed off at once, is fresh, like that swallowed, and the prejudice is merely a sentimental one that would disappear if the practice became general. For meat, etc., firmly wedged between the teeth, the ordinary method of removal by toothpick and thread will satisfy. I can state from experience that meal lavage as above keeps the teeth cleaner than by any other method I know. To prevent harmful friction on the gum I place the brush in half a glass of boiling water to soften bristles, take out and apply dentifrice, and fill glass with cold water. Movement should be up and down at first, then laterally. Thus with meal lavage, toothbrush after last meal at night, toothpick and thread, I think we have a potent means of averting dental sepsis, or rather of attaining oral hygiene.

THE IMMEDIATE TREATMENT OF SEVERE POST-PARTUM HAEMORRHAGE.

DR. ALEXANDER BROWN (London, N.W.) writes: Evidently Mr. R. K. Howat did not read an impressive article in the *Lancet* on this very subject, some ten to fifteen years ago, by the late Mr. Stanmore Bishop (Mr. Stanmore Bishop's article was published in the *Lancet* of 1901, vol. i, p. 1069). There the lamented surgeon criticized in a very able fashion the "encyclopaedic list" of remedies; pointed out how the employment of first one remedy, then another, and yet one more, often found the patient dead before the next could be attempted; and then proceeded clearly to lay down that the principles governing the arrest of haemorrhage in, for example, a limb, were equally applicable in haemorrhage from the uterus—namely, elevation and compression at the nearest "pressure point"—the abdominal aorta. At the time, I remember, I looked up the matter in one or two textbooks, and noted how flabby and unconvincing their teachings were, and how unfavourably they compared with the inexorable logic and explicit directions of Mr. Bishop's article. Accordingly I adopted the latter's precepts, and in the few severe cases of *post-partum* haemorrhage I have since had have always followed them—with success, I am glad to say. It is truly extraordinary to hear from Mr. Howat that obstetricians and textbooks have not mended their old ways in this respect, and Mr. Howat is to be congratulated on once more insisting on a clear course of treatment in the great emergency of *post-partum* haemorrhage.

DR. J. FARQUHAR (New Romney) writes: "In conversation every one found the suggestion a novelty"—concludes the author of an able article on the subject in your impression of February 5th, p. 193. Well, there is nothing new under the sun. Forty years ago I had seen or heard the method advocated of raising the bleeding area, and can easily remember standing on the bed and raising a rather flaccid multipara in dire straits, feet in air and head hanging downwards, but not using the additions recommended by Mr. Howat. Success was immediate and lasting. I can also remember another way I used. In a very cold house in an exceptionally hard winter season in the West Riding I met with a case of this description. After douching the uterus freely with very hot water, I gave by the mouth about a quart of very hot gruel with a similar happy result. Ergot I had not found very reliable in junctures of this sort.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Seven lines and under	0	5	0
Each additional line	0	0	8
A whole column	3	10	0
A page	10	0	0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Wednesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.